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THE IRON AGE.

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THE IRON AGE

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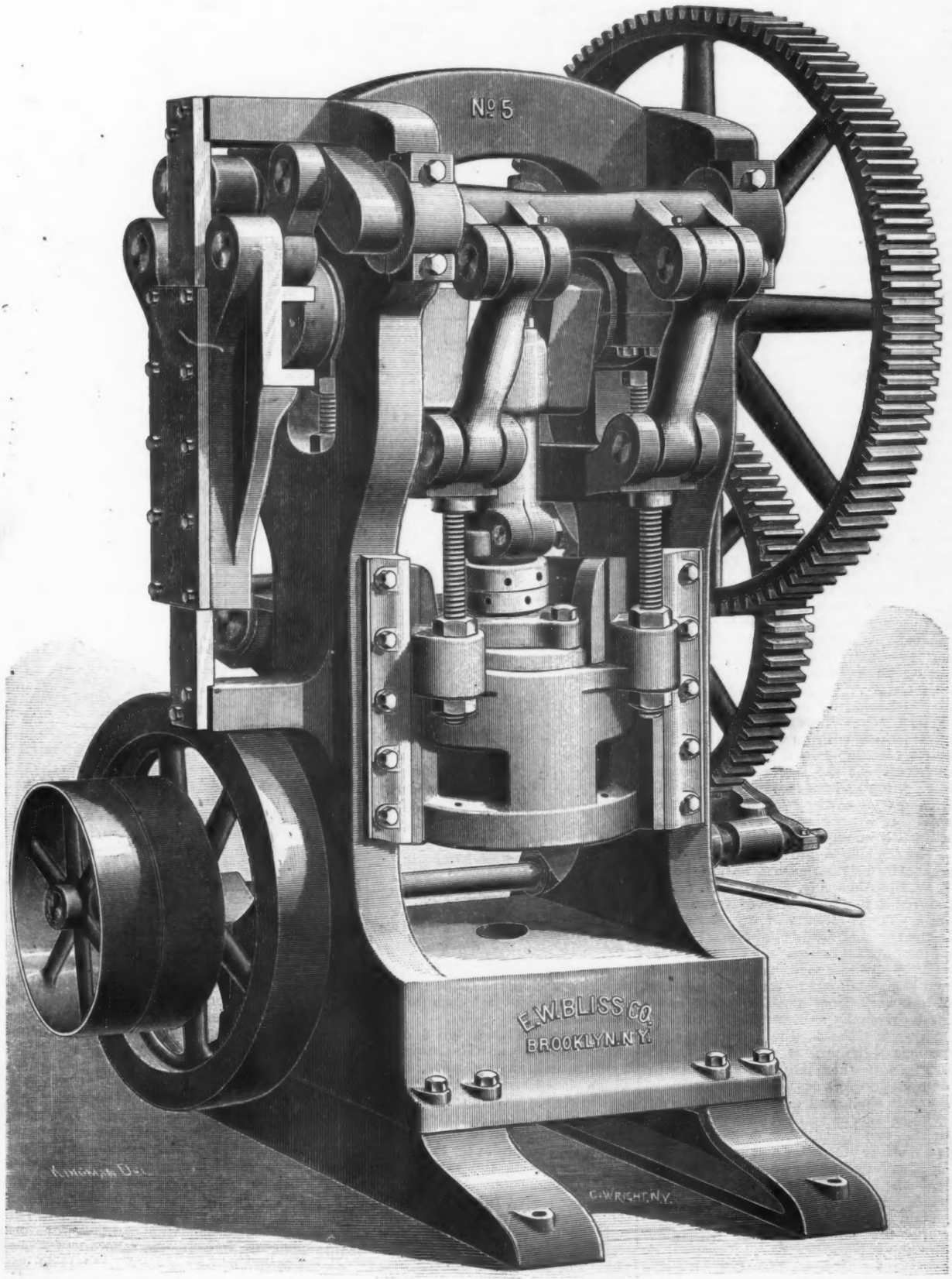
Sheet-Metal Drawing-Press.

While the principle of drawing sheet-metal into cylindrical and various other forms is in itself exceedingly simple, various mechanical difficulties are met with in its practical application. All machines designed to do this work contain three essential features: a hollow die, whose inside form is that of the article to be drawn; a punch, or male die, which enters the other and presses into it the metal operated on, and a metallic ring which surrounds the punch and presses the sheet of metal, or "blank," against the flat face of the hollow die, from between which two surfaces the blank is drawn as the punch strikes it and carries it into the die. If



SHEET-METAL DRAWING-PRESS, BUILT BY E. W. BLISS COMPANY.

the punch and hollow die should be used alone it will be readily seen that the thin, flat sheet of metal lying on the die would be at once doubled and crumpled up when the punch forced it into the hollow opening, and the function of the blank-holder, as the ring is called, is to hold the blank smooth and prevent wrinkling. In all drawing-presses, therefore, there are two distinct mechanical motions to be provided for. The lower, or hollow, die is generally secured to a stationary bed and the punch and blank-holder given the necessary motion, though occasionally a press is met with in which the blank-holder is stationary and the lower die rises to it. This, however, is not good practice, as the machine is much less convenient for the operator.

To obtain the motion necessary for the punch is a very simple matter, as nothing more is required than the reciprocating action of a cross-head driven by a crank on the main driving-shaft of the machine. That required for the blank-holder, however, is more difficult to obtain. This results from the fact that it is necessary for the blank-holder to first quickly descend ahead of the punch; to press the blank firmly against the lower die; to remain at rest, with full pressure exerted, while the punch comes down and does its work, and then to return to its upper position along with the punch, to enable the finished article to be removed from the die and a fresh blank to be inserted. The obvious method of obtaining this action is by the use of a cam mechanism, and for many years this was the only method employed. But the pressure required to prevent wrinkles forming in the blank is so great that it is a very difficult matter to construct a cam and roll which will stand the abuse. Moreover, this pressure being brought against the main shaft causes frequent breakage of the latter, and by reason of the pressure brought on the main journals and the rolls causes great waste of power in friction.

An adequate idea of this great pressure may be had when it is stated that in drawing up articles of tin-plate in a press of the capacity of the one here illustrated and in which two steel cams were used having an aggregate width of face of 12 inches, the rolls against which the cams operated being made of cast-steel, journal-shafts 4 inches diameter working in gun-metal boxes, with an aggregate length of bearing of 20 inches, it has been impossible to prevent the bearings from cutting more or less and the face of cams and rolls from giving way by crushing, so that repairs on the old-style cam-presses are frequently required.

The machine here shown is the development of the original mechanism designed by E. W. Bliss Company, Brooklyn, N. Y., and referred to in *The Iron Age* of November 8, 1888. The peculiarity of this device lies in the fact that the blank-holder is given an intermittent motion, the time of pause, or dwell, being about one-third, this motion being obtained by means of a system of link-work from a reciprocating cross-head driven by a continuously rotating crank-pin. The relation between the two motions of the press is graphically shown in Fig. 4, in which the horizontal ordinates represent degrees or the angular motion of the main shaft, and the vertical ordinates representing the vertical distance traveled by the punch and blank-holder, respectively, on the downward and upward stroke. By consulting the drawing it will be found that the blank-holder travels down with but in advance of the punch and that at a certain point—about half way—it stops, while the punch continues its motion. The punch is thus enabled to perform its work on the blank while the latter is firmly held by the holder.

In building presses for large work, the practice heretofore has generally been to place the crank-shaft and gearing in a pit below the die-bed, on the plan known as the "Marchand." By the arrangement here shown a great saving of material and expense is obtained over the other plan, amounting, both as regards weight of machine and cost of construction, to about 30 per cent. This is the only press of its size, as far as we know, where the main frame, or housing, had been cast in one piece, thus securing an amount of rigidity and compactness not to be had by the other method. Not only is there a saving in the cost of the machine itself, but the expensive foundation and pit required in the old Marchand press is done away with, this machine being self-contained and requiring nothing more than a good solid floor of sufficient strength to carry the dead-weight.

The details, Figs. 2 and 3, may be described as follows: The main frame, or housing, cast in one piece, is provided with a planed bed at the bottom, on which the die rests. Two uprights, each with a section of 18 x 5 inches, serve to take the tensile strain produced in doing the work and also serve as guides for the blank-holder and for carrying the various shafts and other attachments. At the top of the frame are placed three pairs of journals, the center one carrying the main shaft and the other two the rock-levers for working the blank-holder. The main shaft is of hammered steel, forged from a single billet, and the crank slotted out. It is 7½ inches diameter, with a throw of crank of 17 inches. The cross-head, or plunger, to which the punch is attached, is guided in ways planed on the inside of the blank-holder slide, and is operated by a pitman from the main crank. This pitman has a steel adjusting-screw, 5 inches in diameter, to regulate its length, and is held in the plunger by a ball-and-socket joint, as shown in Fig. 3. The ball forged on the end of the adjusting-screw is 7½ inches diameter. Two collars are provided on the screw in which are placed ratchet-pawls, placed reversed ways, the collars having holes for the insertion of a round bar. By operating one collar or the other the pitman may be lengthened or shortened to give the required adjustment.

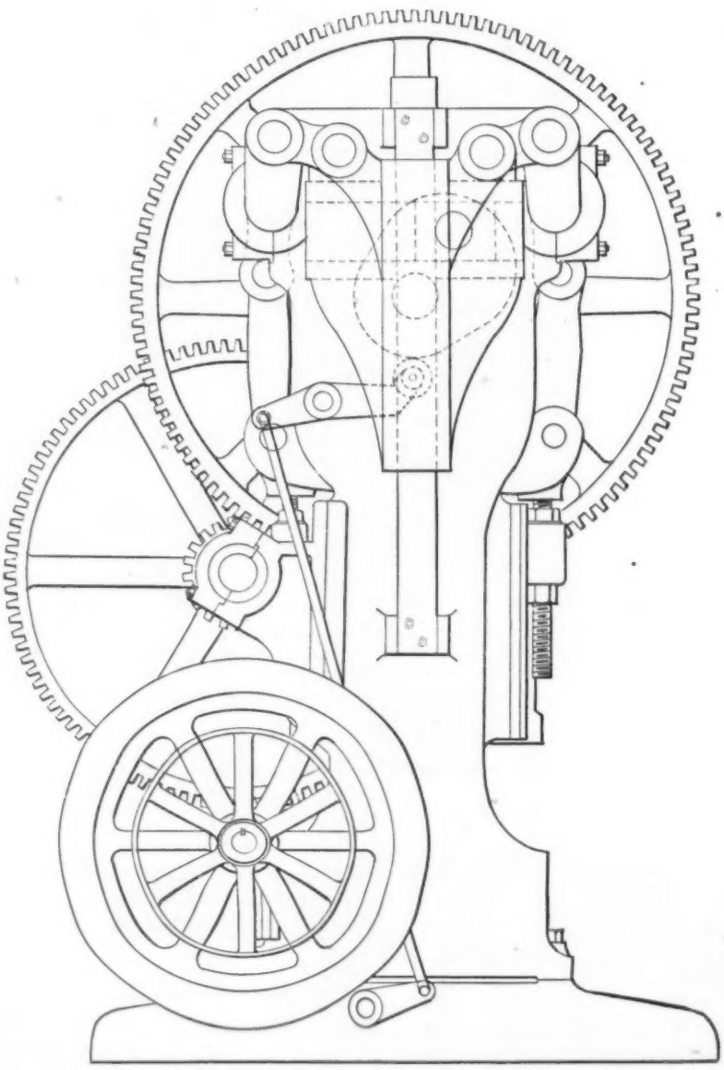


Fig. 2.—End Elevation.

On the left-hand end of the crank-shaft is placed a crank-disk having a steel crank-pin 5 inches diameter and 20 inches throw. This operates the outside cross-head, which is carried by a vertical wrought-iron guide attached to lugs on the housings of the machine. The cross-head, therefore, has a reciprocating motion of 20 inches in a vertical direction. Two links connect the upper part of this cross-head with arms on the rock-shafts before mentioned, imparting to them a vibrating motion. Between the uprights of the housing similar arms on the rock-shafts are connected by four links to two yokes extending front and back; and again, these yokes are connected by four 2½ inch steel screws with the blank-holder slide, thus imparting to it the necessary motion. By examining the construction of the machine it will be seen that when the

outside cross-head is at the upper end of its stroke, the links connecting with the rock-shafts are in a position which give very little motion to the rock-shafts. As a matter of fact, while the crank is passing through one-third of its revolution (one-sixth on each side of the vertical line), the motion imparted to the link-pins in the rock-shafts is only about $\frac{3}{16}$ inch, and as in this position the links on the inside, attached to the yokes, are on the dead-center, there is practically no motion of the yokes during the period of the revolution. From actual calculation the vertical motion of the yokes and blank-holder slide at this time is $\frac{1}{320}$ inch, which is far within the ordinary spring of the iron, and not the slightest trace of motion can be detected in the machine or from its results in the work produced.

As the outer cross-head travels toward the lower end of its stroke the arms on the rock-shaft are drawn off the center and the blank-holder raised. It will be seen from this construction that an enormous pressure can be obtained with little strain on the operating mechanism and no cause for wear or breakage, while at the same time the pressure being taken off the shaft and journals little power is lost through excessive friction. In order to regulate the pressure necessary to do the work the holding-down screws pass through clearance-holes in the lugs on the blank-holder slide and are provided with lock-nuts, as shown.

The driving mechanism consists of a train of gears placed at the back of the machine, the pulley-shaft making 28 revolutions to one revolution of the main shaft. The large gear on the main shaft is 6 feet in diameter. The machine is driven by a friction-clutch, a lever operating which is placed in a convenient position for the operator to stop the machine instantly at any part of the stroke and to insure prompt stoppage when the clutch is thrown out. The lever automatically applies a powerful brake to a brake-wheel provided on the pulley-shaft. In operation the main shaft makes nine revolutions per minute, which gives the operator ample time to remove the finished work from the die and insert a fresh blank without stopping the press. In order to facilitate the operation of removing the work from the die an additional motion is supplied.

The crank-disk on the outer end of the main shaft is cam-shaped. Against the periphery of this cam is placed a roll, carried by a vibrating-lever attached to the main frame. This lever imparts motion to a rock-shaft placed across the bottom of the machine near the center of the press, and attached to this rock-shaft is a lever which operates a knocking-out pad, which at the proper time lifts the finished work clear of the die, so that it may be easily and quickly removed by the operator. This attachment is not shown in the perspective view; its construction will be understood from the drawings of the front and end (Figs. 2 and 3). The general dimensions of the machine other than those mentioned above are: Lift of blank-holder, 12 inches; largest size of blank the press will take, 30 inches round or 36 inches x 30 inches oblong; total weight, 30,000 pounds.

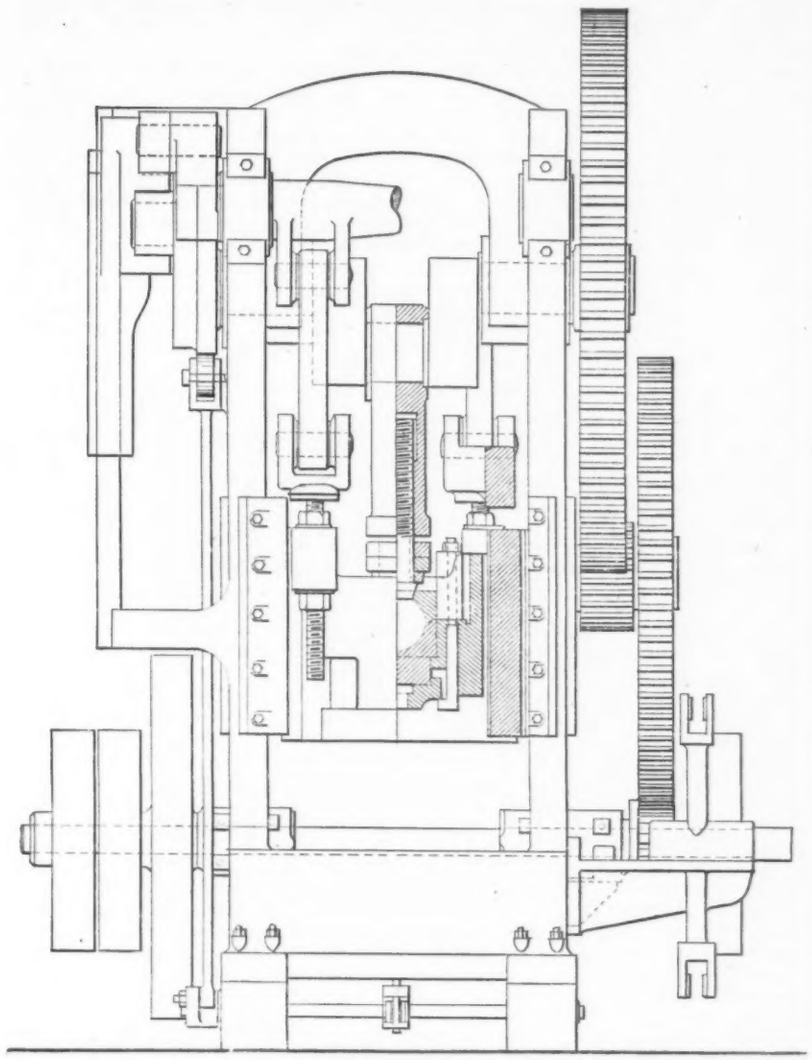


Fig. 3.—Side Elevation and Section.

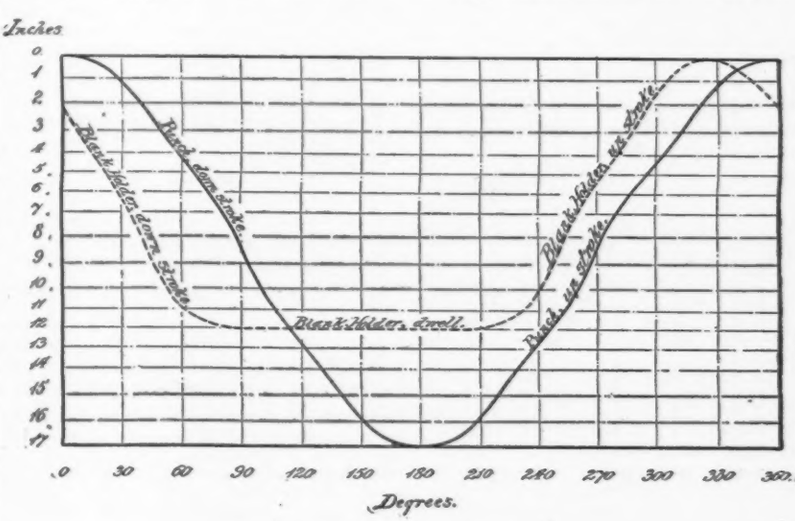


Fig. 4.—Diagram Showing Movements.

The Milwaukee owners of shares of stock in Gogebic iron mines are realizing some return on their investments at last. Sales are being made to a syndicate acting in the interest of the Wisconsin Central Railroad, to control shipments of ore over that route, and quite a number have passed under their control. According to a dispatch from Milwaukee, dated the 26th ult., the Wisconsin Central syndicate have just purchased the Palms Mine, which adjoins the Colby Mine on the east. The price paid is not stated, but it is understood to be practically the same as was paid for the Superior, the stock of which was taken on the basis of $200,000 for the entire property. The Palms is said to be the cheapest purchase yet made by the Wisconsin Central people, as it promises to be one of the best producing properties on the range, besides turning out a very high grade of ore. It is intended to take 100,000 tons of ore out of the Palms the coming season.

The annual output of the iron companies of Minnesota will amount to about 860,000 tons. The Chandler Iron Company, of Ely, reports that their shipments for the year amounted to 308,744 tons. A short time ago the Minnesota Iron Company filed a statement that their annual shipments had been 535,711 tons. These two reports contain about all the iron that has been shipped for the year ending last July.

The Hammer Versus the Press.*

BY FERD. GAUTIER.

One of the most difficult questions to discuss is the relative efficiency of the hammer and of the press in forging, particularly since those concerns who possess both classes of machinery are not numerous and do not freely communicate the results obtained by them; besides, the effect of shock in producing molecular displacements is difficult to calculate. The impression, however, cannot be put aside that the press has an advantage. The large works whose names are given below, and who were equipped with powerful hammers, now possess or have ordered great presses, probably because they expect to find an advantage in using the latter:

Press Tons.	Equivalent hammer. Tons.	Firm or works.	Largest hammer in works. Tons.
5,000	150 ?	F. Krupp, Essen	50
4,000	120 ?	J. Brown, Sheffield	502
4,000	120 ?	Société de Chatillon et Commentry	...
2,000	75 ?	F. Krupp	50
2,000	75 ?	Le Creusôt	80
2,000	75 ?	Aciéries de Terni, Italy	100
2,000	75 ?	Aciéries de Witkowitz, Austria	...
1,200	30 ?	Bell bros., Middlesborough	...
1,200	30 ?	Baltic Company, St. Petersburg	...
1,200	30 ?	Taylor Bros., Leeds	...
1,200	30 ?	Monkbridge Iron Works, Leeds	...
1,200	30 ?	Barrow Works, England	100
1,200	30 ?	Trubia Arsenal, Spain	...
1,000	25 ?	J. Brown, Sheffield	50
600	20 ?	K. Wittgenstein, Vienna	..

This list includes only the presses made or under construction by the single firm Tannett, Walker & Co., Leeds, England. Davy, of Sheffield, who had constructed the 4000-ton Cammell forging-press, could furnish his contingent to this extension of the new method of forging. It will be observed, therefore, that the larger establishments, those who have been most thoroughly equipped with hammers, have ordered powerful presses; besides, those who have had the longest experience in handling hammers, like John Brown and Krupp, have ordered additional ones, being undoubtedly satisfied with their working. It is evident that this is a distinct movement which must have some special reason.

A question which seems to us to occupy a prominent position in this matter is that relating to quality. It was possible to speak disparagingly of the press when it was employed in working puddle-balls. The reproach was made justly that it did not sufficiently well expel the cinder interposed between particles of iron, and that it left the metal in an impurer condition than it would have been had the hammer been employed. In this case the shock is necessary to eliminate a semi-fluid silicate whose tendency it is to quickly congeal between the particles of iron. As a matter of fact, the superiority of the hammer for this class of work is generally recognized.

The question naturally arises whether this is not also true of certain iron forgings obtained by gradually adding pieces, the object being to weld them to the body of the article. It may be feared that the oxide of iron produced during long continued heating is with difficulty displaced by simple pressure when it is in contact with a material already rendered dense and a more porous mass which it is the aim to weld to it. This difficulty will occur anyway, considering the work of gradually piling up the iron to produce a forged shaft with several throws.

But when the problem of forging steel is approached the press no longer has this apparent inferiority, and it is difficult to see why products so forged should not be at least equal in quality to those obtained under the hammer. One of the points affecting quality seems to be, at least for steel, the lessening of the number of heats. It has never been claimed that undue length of heating could possess any advantage whatever for steel. A 15-cm. steel gun, 36 calibers in length, produced from an ingot weighing 36½ tons, required in Sheffield three weeks' work under a 50-ton hammer and called for 33 reheatings. An ingot weighing 37½ tons has furnished the same gun in 15 heats and four days' work with the 4000-ton press of John Brown & Co. As indicating the shortening in the time of work these figures are eloquent.

Incidentally reference may be made to the reproach entered against hammering that it gives the faces parallel to the direction of the shock a concave form, while the press through its more penetrating action yield faces convex in form. This is a fact well known, and it is striking particularly when the piece to be forged is considerable in weight as compared with the power of the hammer. The reason for it lies in the inertia of matter. The blow of the hammer first of all spreads over the surface and by reaction upon the face which rests upon the anvil.

The intermediate layers simply transmit the vibrations produced like suspended billiard-balls, the last of which is moved when the first in the row drops back after being pushed from its vertical position. It is only, therefore, by a gradual diminution of the thickness of the piece that hammer forging can produce an effect upon the interior particles. For certain forgings which must, like guns, be bored subsequently the removal by tooling of the central part may partially cause this inequality of work to disappear, but it must invariably exist, for all solid pieces, for instance, like shafts.

In the case cited above of a gun of the same shape and the same dimension obtained with a 50-ton hammer and a 4000-ton press, it would have been interesting to compare the tests of pieces cut from the central core in boring. It is to be regretted that these figures cannot be submitted.

It is difficult to see when the case of quality arises where the press when it acts upon a homogeneous substance like a steel ingot slowly and gradually has not marked advantages over the results of sudden and invariably unequal work. One point further may be added in favor of the press, and that is that the temperature at which the metal can be worked is notably lower than it is for the hammer. With a substance requiring careful heating like steel this must be an advantage.

Whatever may be the points, when quality is considered, which a forging with the press possesses, it is necessary to consider the question of comparative cost. It has been noted in quoting the example of forging the 15-cm. gun that for the same piece the number of heats was reduced by half and the time of work by at least three-quarters and very close to four-fifths. This represents a saving of labor and fuel without counting the proportionate waste by oxidation. It is incorrectly believed that the powerful presses now being built must naturally be slow in their action. This is a mistake. These presses strike 10 to 12 blows a minute and could undoubtedly go beyond that speed. Considering the fact that with powerful hammers the tup must first be placed on the forging to make sure that the blow will strike the correct point, it is not believed that the hammer surpasses the press in this respect. The same precaution is not necessary for it, since the influence of a blow inaccurately struck is not of the same importance, and since whatever errors there may be in it can be corrected as soon as the first impression is made by stopping the movement. That cannot be done with the hammer.

Among the elements of cost in the forging the consumption of steam must be considered. In hammers higher pressures without expansion and without condensation are employed, conditions which have never been considered economical in the utilization of steam. In modern presses pumps and accumulators are used. In this case relatively weak pressures may be employed acting continuously and under the modern improvements reached in the use of steam by compounding, expansion and condensation. In this case the advantage is certainly on the side of the press, and, like all economies which are repeated a good many times, this must in the aggregate be considerable. It is not questioned that if the Terni Works, which in so remarkable a manner utilize hydraulic power to operate a 100-ton hammer with compressed air, had the chance they would not give up this apparatus. Still, they do so indirectly by ordering a 2000-ton press, in spite of the heavy outlay it involves. Nor is it just to reproach the forging-presses as counterbalancing their economy in steam with a large consumption of water, which might be troublesome in certain cases. There is no waste of water, since it is always the same which comes from the pumps to the accumulators, from the latter to the large cylinder and from there to the tank, from which it is again pumped.

It has been observed that in a general way, and particularly for forging steel, the press seemed to possess advantages over the hammer so far as quality of the product was concerned. It has been observed, too, that so far as the cost of forging itself is concerned—the cost per hour of forging, without counting cost of sinking fund for raw material, the press seemed to appear more economical. It only remains to ascertain how for the same working capacity the cost of the two tools compares. The real power of the hammer is measured by the weight of its anvil and bed. If the hammer acted on soil which escaped the action of the blow the fact would be always *nil*. The rapidity with which it absorbs the momentum of the blow measures the useful effect. Naturally, then, the anvil of a 100-ton hammer is an important part of the apparatus. The one at Creusot has a weight of 720 tons, and that at Terni 998 tons, resting upon close piling covered by a thick layer of *beton*. The whole is surmounted by cut-stone masonry with timber. The cost of these large tools is great, and is certainly much larger than that of a press. The 4000 Tannett, Walker & Co. press may be purchased for 700,000 francs, without counting cranes and buildings, which would be the same in the case of a 100-ton hammer. It is not believed that such a hammer with its anvil could be produced at such a price.

The press does not need an anvil. It can work anywhere where the ground is capable of carrying it, since its slow and gradual action operates through parts solidly united with one another. Another consideration which possesses importance is that forging with the press is believed to be able to operate practically three and one-half times more effectually than a hammer of equal power. It is true that some uncertainty exists on this point. What rule is to be followed in comparing the power of a hammer a given number of times with an equivalent press? Theoretically there is none. A blow cannot be compared to slow progressive action, which causes the metal to flow when its

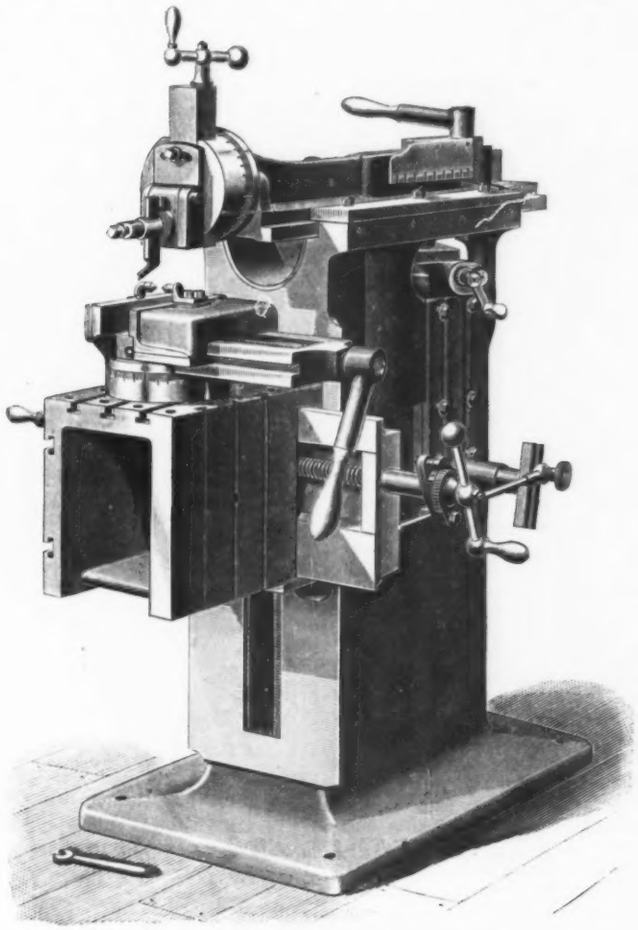
* Presented at the Paris International Congress of Mining and Metallurgy.

temperature is not too low. In the table given in this paper an effort has been made to fill this gap, but it has been impossible to give anything but the opinion of builders of presses, whose ideas tend to exaggerate the power of their tools to the detriment of their adversaries. The builders insist that with a 1200-ton press as much as 18 tons of ingots may be forged per hour, or about 3 tons every ten minutes. It is understood that the work begins with 400 mm. square ingots, weighing 1½ tons, forged down to 200 mm. square These are at least the conditions of the contract with Bell Bros., of Middlesborough, and if they are not carried outthe order is canceled. In the opinion of the builders a 30-ton hammer, which approximately would correspond to the press in power, certainly would not do such work. With this same 1200-ton press an ingot 700 x 470 x 1200 mm., weighing 3¼ tons, can in ten minutes be forged to an average dimension of 660 x 180. It will be understood that with such power the cost of installation is in favor of the press, since it is intended to replace several hammers.

There are two classes of work which can be carried out in presses, the work of forging, properly speaking, and the work of bending or shaping. Originally the Tannett presses were specially built for one or the other of these purposes, and the Davy press alone could be considered as applied to both ends. This fact may be explained by the circumstances that the first forging-press was ordered by John Brown & Co. and that as they already possessed a bending-press they called specially for their new press for forging. As a matter of fact, the tendency, at least among consumers who have the intention of putting in only one press, is to so arrange it that both classes of work can be carried out. For large establishments it is better naturally to adopt special tools for each work, as is done at Krupp's and at Brown's.

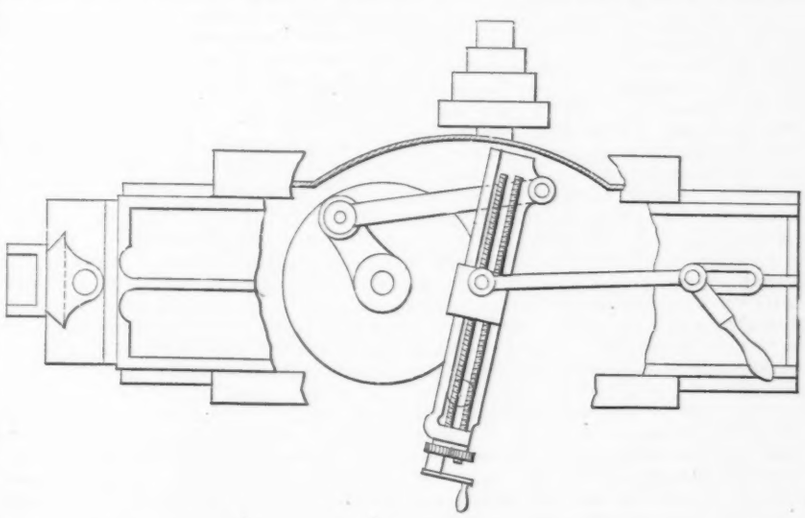
Quick-Return Crank Shaper.

The accompanying cut represents a new quick-return crank shaper, built in three sizes, 12, 15 and 20 inch stroke, by George Juengst & Sons for the Prentiss Tool and Supply Company, 115 Liberty street, New York. By referring to the sectional view shown in the cut below it will be seen that the quick return is obtained by a link motion instead of a sliding-block. The motion is brought to the ram by two steel links, one of which connects the worm-wheel driven by a worm running in oil to the outer end of a saddle-lever which at no time is subjected to more pressure than is brought to bear on the cutting-tool. A second link connects the adjustable saddle on the saddle-lever to the bolt in the ram, and consequently the only wear possible is due to the turning of the wrist-pin in the links. By this arrangement the forward and quick-return motion are in the same ratio to each other at all lengths of the stroke. The changing of direction of stroke while the machine is in motion is done by a pair of twin screws, one operating on the saddle-lever while the other acts on a wedge in the same to bind the saddle to the lever. To change the stroke, the crank on the screw is turned backward one or two turns to release the wedge, when the gear, which is splined on the adjusting-screw, may be thrown in contact, after which the stroke can be set to the required length. After having been adjusted, the gear is disengaged and the wedge forced back to bind the saddle firmly to the lever. The graduated plate on the ram is designed for the purpose of indicating the length of stroke. The feed mechanism in traverse is so constructed as to avoid bending or breaking of the parts in case the table should run out at either end. The head has a feed of 5½ to 7½ inches at any angle. Two styles of graduated faces are provided with the machines, one having parallel jaws and centers, while the other has swivel jaw and two screws for adjusting. The gearing of the machine is unusually powerful, being on the 12-inch stroke up to 13, on the 15-inch stroke up to 14 and on the 20-inch stroke up to 20. All are driven by four-step cone-pulleys, the larger having 3-inch faces and the smaller 2¼. The shaft, screws, links, &c., are made of steel and the T-slides are cut from the solid. The weights of the machines are 1000, 1500 and 2800 pounds respectively.



QUICK-RETURN CRANK SHAPER.

An electric snow-plow was brought out for the first time in Boston during a recent storm and is said to have worked well. The *Transcript* says the plows are built by Louis Pfingst, master-mechanic of the West End road. Each sweeper consists of a platform car mounted on a four-wheel truck, two Thomson-Houston motors connected with the axles furnishing motive power. Underneath each end of the car is a large cylindrical brush reaching across the track at an angle of about 45°. Upon the car is an electric motor of 15 horse-power which runs three brushes at a rapid rate of speed. An upright standard in the center of the car supports the trolley, which is similar to those on the box cars, and around it is a group of incandescent lights. The motors which run the car are of 30 horse-power. The car runs either way, and the brushes are so geared that the one on either end can be operated while the other is lifted from the track



PLAN SHOWING DEVICE FOR CHANGING STROKE.

The U. S. Torpedo-Boat Cushing.

In the southern shop of the Herreshoff Mfg. Company, at Bristol, R. I., the United States sea-going torpedo-boat No. 1 is fast nearing completion. Secretary Tracy has recently issued an order authorizing the naming of the craft the Cushing, in honor of the brave Commander William B. Cushing, U. S. N., who blew up the rebel ram Albemarle at Plymouth, N. C., in 1864.

The prime purpose of the Cushing is to discharge auto-mobile torpedoes—that is, those carrying their own propelling-power—while traveling at a high speed. It will also carry such other torpedo-tubes and rapid-firing guns capable of discharging 20 shots per minute, mounted upon its deck, as shall be determined after the vessel is afloat and its speed tested. This vessel, which will be one of the most remarkable ever turned out of any shipyard, has a length of 138 feet, a beam of 15 feet, a depth from deck to keel at the highest point of 10 feet and a draft of 4 feet 4 inches loaded.

The contract upon which the Cushing was built requires a speed of 22 knots per hour. It is certainly expected that the vessel will develop a high speed. The steam-ship City of Paris, the Transatlantic greyhound and the holder of the championship for Transatlantic speed, has a displacement of 10,000 tons and its maximum horse-power does not exceed 16,000, showing a ratio of horse-power to displacement of 1.6 to 1. The Cushing's displacement will be about 103 tons, its maximum horse-power, to displacement of 16 to 1.

CONSTRUCTION OF HULL.

The hull is built of steel plates of varying thickness. Every plate in hull and deck is galvanized, as are anchors, railings and all exposed metal-work. The keel is of flat plate, worked to form; the ram-stem is a steel forging extending from the spar deck to 8 feet along the keel from the spur of the ram and the stern-post is another steel forging. The plating is let into the steel forgings, and seen from in front the vessel appears to be as sharp as a cimeter and as smooth as polished wood.

The hull is divided into 11 compartments, separated by water-tight bulkheads, the openings in which close on rubber gaskets with wedge locking devices, which secure them from opening against any pressure. The compartments are occupied, beginning at the bow, 1, the collision compartment; 2, a steam-winch, steam-reel for anchor-chains and will be fitted with a magazine for explosives for the torpedoes; 3, the breech or rear end of the torpedo-tubes, with arrangements for firing and reloading, also quarters for the crew, conveniently fitted up with berths, which tilt up out of the way, lockers for each of the 12 men who will occupy it, a mess-table, &c.; 4, the galley, lavatories, &c., for the crew; 5, forward boiler-room; 6, engine-room; 7, after boiler-room; 8, engineers' and helmsmens' quarters; 9, officers' quarters; 10, pantry, store-rooms, &c.; 11, stearing-gear, paints, &c. Each compartment is fitted with steam ejecting apparatus, the larger ones with two, so that in case of a leak each would have a capacity of 25 tons of water an hour. In connection with the bilge system of centrifugal and donkey pumps, the Cushing should be able to blow out a volume of water equal to its own bulk in eight minutes. The flooding of any compartment except the engine-room would not materially interfere with the working of the boat. For 61 feet of mid-ship length the hull is practically double, the coal-bunkers extending for that distance on either side of the stoke-holes and engine compartment, divided by the bulkheads, the whole forming a material stiffening of the frame of the vessel and affording at the same time an additional protection to its vital parts.

OUTSIDE APPEARANCE.

The Cushing will be very plain above the water and will offer little which can serve as a target for an enemy's guns. The most prominent are two conning-towers and two stacks. A whale-back extends from the forward conning-tower to the bow, and the whole deck is curved so as to deflect shot. A light hand-rail of galvanized steel is erected between the towers, inclosing a deck made up of sectional wooden gratings, secured by easily detachable clamps, and the same kind of railing is continued on the whale-back forward to the steam-capstan and aft to the officers' companion-way. Two galvanized-steel anchors will be carried forward, the ship will ride by a hawse-pipe placed exactly on her center-line, and on deck, aft of the officers' companion-way, will be carried a roomy 11-foot row-boat.

BOILERS.

The Cushing is a twin boat in everything—in boilers, engines, screws, pumping machinery, torpedo-tubes and steering gear, the condenser being the only part of the mechanical equipment which is single. The boilers are the Thornycroft water-tube boilers, which are used in the torpedo-boats built by that firm abroad, and are the first of that pattern made in this country. They were constructed by the Continental Iron Works, of Brooklyn, N. Y. Their essentials are two cylindrical water-legs and a cylindrical steam-drum, which are placed in relation to each other like the two feet and the head of the capital letter A. Between the water-legs and the steam-drum run the water-tubes, so bent as to present the greatest amount of heating-surface, and recurved so as to enter the steam-drum at the top. At the water-leg the courses of tubes are staggered so as to present an opening for the uptake, but they are brought together a short distance higher, the result being to inclose the draft between the two series of tubes on each side, which by their windings considerably increase the surface over which combustion occurs. Each boiler has about 34 square feet of grate-surface, a heating-surface of about 1800 square feet. The boilers weigh 8 tons each, will each develop 800 horse-power, are intended for a maximum pressure of 250 pounds of steam and will be tested with 500 pounds to the square inch hydrostatic pressure. The fire-rooms are arranged on the closed stoke-hole principle, for they will be closed nearly air-tight, and an efficient fan-blower will force air down from an opening in the deck at a pressure equal to that of about 4 inches of water. Every inch of space aboard the vessel is utilized, but this is almost the only place where the idea of crowding obtrudes itself.

THE ENGINES.

It is doubtful if in any other place in this country is so much power concentrated in so small a space as in the engine-room of the Cushing. The main engines are two sets of five-cylinder quadruple expansion engines of 800 horse-power each, and with pumps, blowers, winches, &c., there will be a total of 25 steam-cylinders on board, which will probably be increased to 28 by the time the vessel is fitted with her lighting mechanism. The cylinder diameters of the main engine are: high pressure, 11¼ inches; first intermediate, 16 inches; second intermediate, 22 inches; low pressure, two cylinders, 22 inches each. The stroke is 15 inches, and the five cranks are so set in relation to each other as to give the least vibration to the hull. The main shaft is 5½ inches in diameter, of forged steel and is 61 feet long. In the engine-bed it carries only the cranks and runs through large bearings. The balanced piston-valves are operated by a shifting eccentric on the main shaft without the aid of links. A reducing-valve allows the use of direct steam in starting. The engine will run practically without noise and can be easily reversed by one man. All the parts are tested to pressures at least twice the estimated working pressure or to a tensile strain of at least three time the estimated working strain. The engine-room will be manned by six men while running. The main steam-pipe is of steel, but the piping between the cylinders and the exhaust into the condenser is of copper and was made in this city. The copper condenser is in the after part of the engine-room and just forward of the bulk-head, separating that from the after boiler-room. It contains 1022 tubes, aggregating more than a statute mile of tubing. The water for the boiler supply will be distilled from the sea-water by Herreshoff's improved distiller, located in one of the forward compartments. This will store fresh water in a supply-tank. The main feed-pumps are worked by independent engines, one for each main engine. There are two compound blowing-engines for the forced draft, and one compound engine to work centritugal circulating-pump, all carefully balanced and connected to exhaust into the main condenser. A donkey-pump in each fire-room is connected to draw either from condenser, supply-tank, the sea or bilge suction-pipe, and to discharge into boiler, on deck, fire-room, or overboard. The main engines work twin propellers of manganese bronze, galvanized, each 4 feet 2 inches in diameter, with about 8 feet pitch. For about 32 feet of its length the shaft runs outside the hull, supported by suitable bearings. At its stern the vessel carries a strong frame-work guard, built out to prevent it from getting so close to a dock as to foul or damage the propellers.

CONNING-TOWERS.

The movements of the vessel are controlled from the two conning-towers. These are circular, built of ¼-inch steel plates, and have double sliding-doors with quick-acting appliances for releasing one door if injured in action and instantly substituting the other. The towers are lighted by five bull's-eye windows each, but the domed tops are arranged to be elevated by hand-wheels operating screws through crowned gears, so that a clear outlook through a 4-inch space all around the horizon may be had. This will be necessary for use in crowded harbors, but in battle the top will be shut down upon its rubber gaskets, making it water-tight. Both towers are fitted with steering apparatus, engine-room telegraph and voice-tube between towers and engine-room, and signal-gear and speaking-tube between the two conning-towers. Each will be manned while the vessel is under way. The forward tower has a steam steering-engine which develops 6 horse-power. It can throw the wheel from hard-a-port to hard-a-starboard in three and a half seconds—that is, before the vessel can traverse her own length at full speed. The after tower has a manual steering-wheel. The engine-room telegraph is comprised in a couple of polished-bronze levers, working over 180° of a sector, controlling starboard and port main engines respectively. Both levers thrown forward on a horizontal line mean full speed ahead; both vertical mean stop; both on a horizontal line pointing aft mean full speed astern. They may be moved together or singly. The rudder-wheel ropes are of wire, and run straight to the tiller. Aft the after conning-tower detachable crane hooks connect the steering mechanism for that tower, which moves in unison, as already described, and the only sheaves in the wheel-rope systems are the four necessary to change the transverse motion at

the conning-towers into a longitudinal pull. The rudder-post is a steel forging 6½ inches in diameter, and the rudder is overhung, and is of such size and shape as are calculated to give the boat the maximum maneuvering qualities either going ahead or astern.

AUTO-MOBILE TORPEDOES.

The auto-mobile torpedoes to be used will probably have a velocity of 40 feet per second, and will be discharged from the Cushing when she is traveling at a speed of 38 feet per second. Various methods are in use for discharging these projectiles, one method being by compressed air, another by piston, and again by an explosive charge. The last method will probably be the one used on board the Cushing. The two bow torpedo-tubes are arranged under the whale-back in a parallel line, and incline toward the horizon at an angle of about 3°. The tubes are 14 feet long and 14 inches in internal diameter. Nothing but their muzzles is visible from without, and within the vessel their breech will come just above the head of a man of average hight standing on the floor of compartment 3. Two torpedoes will be kept in tubes and two more in suitable recesses left in the floor of this compartment. The explosive charge which ejects the torpedo is kept in compartment 2, and after a tube has been discharged a torpedo is raised from beneath the floor and by means of a parallel motion raised to the hight of the breech and slid into the tube. The rapid-fire gun equipment is yet to be decided upon. The guns will be mounted on deck and their magazine will be under the after conning-tower.

The Cushing may be ready for the water early in the year 1890. If the winter should continue to be open the boat will be launched when ready, and will be subjected to her speed trials in the Narragansett Bay. She will not, however, be run at high speed among floating ice.

The Illinois Steel Company's 4 per cent. dividend is payable February 2 to stock of December 31, the books to reopen January 7. This dividend is for eight months ended December 31, and while the company expect to earn over 8 per cent. for the year to end April 30, it is not intended that payments on the stock shall exceed 6 per cent. per annum for the present. Four per cent. for eight months is at that rate per year. The closing of the books for the dividend shuts off the chance of converting new bonds into stock so as to secure this dividend, for the first payment of the bond subscription is due January 2, and prepayments of the whole subscription cannot be made before that date. The second payment is due February 1, the third March 1 and the fourth April 1. Conversion of bonds into stock can be made in season to participate in the next dividend. The company would have earned more than they have had not mostof the rails manufactured been on last spring orders and at prices then current. The later orders which run into 1890 are at advanced prices. The companyhave their 1890 ore already in stock, and this stocking up in advance calls for a large working capital and exhorts to conservatism in present dividends. The 4 per cent. applies to about $17,000,000 stock. The company expect to derive a temporary advantage not only from the rise in steel rails but in the probably cheaper ore transportation rates in 1889 than in 1890. This company have a wage arrangement with their employees which insures immunity from labor strikes. An upset price is paid for labor and a higher price dependent upon the advance in steel rails.

PUNCH FOR LIGHT SHEET-METAL.

Railroad Building in 1889.

The *Engineering News* prints the following summary of the railroad construction of the year.

The list of new railway lines constructed during 1889, which we present with this issue, shows that the total addition to the main-track railway mileage of the United States during the year will vary very little from an even 5000 miles. This is the smallest construction recorded in any one year since 1885, when the total increase was but 3588 miles. The construction in the intervening years has been: In 1886, 7471 miles; in 1887, 12,668 miles; in 1888, 7284 miles.

The bulk of this year's construction has been done in the South. Over 2000 miles of the new lines reported to us lie south of the latitude of Cincinnati and east of the Mississippi River. Washington, however, has had the greatest increase of railways of any single State, 353 miles having been built there in 1889. Georgia comes next with 315 miles, and then follow North Carolina with 279 miles, Texas with 270 miles and Mississippi with 212 miles. Sixteen other States report between 100 and 200 miles and in Vermont, Rhode Island, Mexico, Arizona and Nevada no new track-laying has been reported.

Very few long lines have been built this season, but there has been a great number of short branches and extensions, especially in the East. The total number of separate lines on which track was laid during the year was 253. This work was done by 197 different companies. The average length of each extension, therefore, was almost exactly 19½ miles. In Canada, during 1889, 733 miles of track were laid, and in Mexico the construction amounted to 369 miles.

Punch for Light Sheet-Metal.

This machine is especially adapted to light sheet-metal work. It will punch a ¼-inch hole in ¼-inch iron or its equivalent. The depth of jaw is 15 inches, and the machine will punch anywhere in a sheet 30 inches or less in width. In addition to the regular sheet-metal work it can be used for punching holes in pipes 4½ inches or larger in diameter 8 inches or less from end of pipe. The plunger that holds the punch is operated by an eccentric, which in turn is worked by a hand-lever. This lever can be worked either at the front or rear. The machine is provided with a stripper that can be adjusted with accuracy, also with gauges and with one each ¼-inch, $\frac{3}{16}$-inch and ¼-inch punches and dies. It is made by the New Doty Mfg. Company, Janesville, Wis.

Rapid Transit Plans.

Rapid transit for New York City will soon be a prominent topic in the discussions of the Legislature. Mayor Grant's bill places the whole subject in the control of the Sinking Fund Commissioners. The People's Rapid Transit Company are the only railroad corporation left amid the many that have sprung up in this city who are distinctively characterized by their announced purpose to buy the right of way through the blocks. This company were organized some 18 months ago, through the efforts of D. C. Linsey, a well-known railroad engineer who died recently. The company propose to build a viaduct road parallel and near to Broadway, just west of that thoroughfare, becoming a sunken road at the Boulevard and running up that street to the Harlem, then crossing and extending to Tarrytown. Its bed will be some four stories above the street and so constructed as to prevent vibration and sound from annoying residents. The arches beneath it are to be rented for store purposes, as under the bridge approaches and as in London and Berlin. Hugh elevators will take passengers to and from the station platforms. The road will have four tracks, two local and two express, the latter carrying passengers from City Hall to the Harlem River in 20 minutes. This company have made preliminary arrangements for their right of way, and there are signs just at present of a vigorous prosecution of the enterprise.

Hamilton Disston, the saw manufacturer, of Philadelphia, distributed nearly $17,000 in Christmas presents to his employees, visiting the works at daylight and personally superintending the giving out of 1400 turkeys. These gifts were regulated according to the merits of individual cases, the largest fowls going to the men with the largest families. There are 1700 employees at the works, and the boys or single men who did not desire turkeys were given money. In addition to this the firm distributed nearly $15,000 in cash to their employees, individual merit also being the basis upon which the money was given out.

Chimneys at Edison's Central Station, Brooklyn.

Through the courtesy of the *Electrical World* we are enabled to present detail drawings of the chimneys constructed for the plant of the Edison central station in Brooklyn, N. Y., our data being taken from an article in the same journal by C. J. Field. The main building, in which the plant is located, is about 80 feet high and provided with two stacks at the rear, 160 feet from the base, with a flue 150 feet in hight and 50 x 120 inches in area. The article states that these stacks have already quite fulfilled the expectations of the designer. The boilers connected with the stacks are eight in number, each of 450 horse-power, the engines used being 12 in number, each of 300 horse-power. The plant is designed for an ultimate capacity of 36,000 lights of 16-candle-power each. Although the building was designed to accommodate this number of lights and has been completed for the full equipment, but one-third of the electrical and steam plant has been installed, that being deemed requisite for present requirements. The remainder will be put in place as needed by the development of the station.

Ship-Building in England.

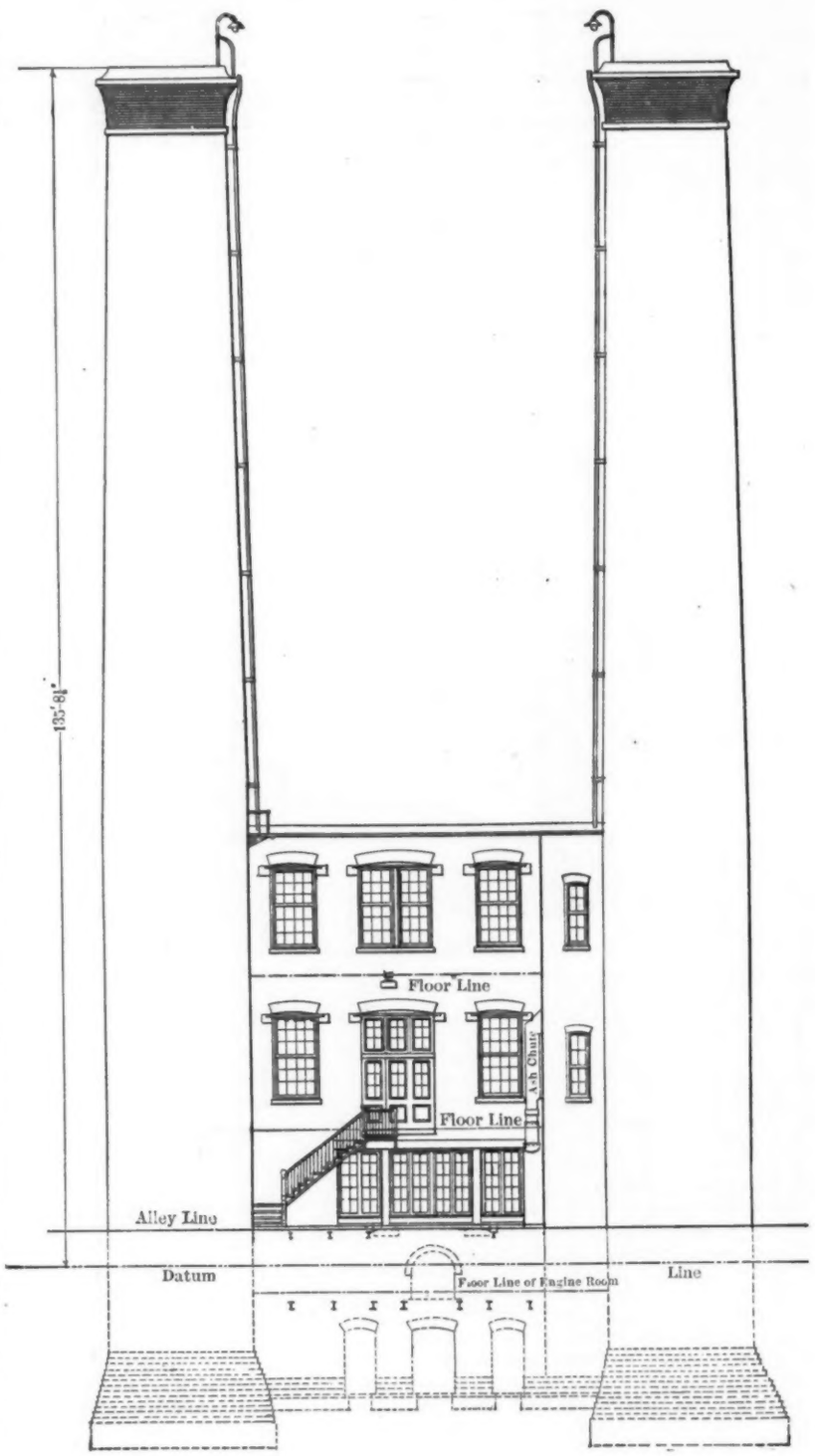
The ship-building returns which are now being compiled in England suggest to the *Engineer* the inquiry whether building is not going on too rapidly. Our contemporary says:

Of course any such question appeals more to the prospect of the endurance of the demand than to that of the mere possibility of construction. As we know, the tonnage of vessels built in the United Kingdom was much larger six years ago than in subsequent years. There were in these later years the artisans and the appliances for the work, but there was not the commercial demand, which had been glutted for the time. In the years of small production there was a recovery in degree—that is to say, that the growth of the needs of the world for oversea carriage continued, and it gradually forced additional orders into the market, which have been in part completed and are in part in course of execution. While this is being done there is the loss of vessels in progress, and the growth of trade goes on, so that it is quite possible that new orders may have yet to be given out, which are delayed by the rather serious advance in the price of the materials that has of late taken place, and which introduces another element into the consideration—that of the relative cost and earning power. A steamer, it is obvious, may pay well at an original cost of about £30,000, when the profit would be very inadequate if the cost were driven up to £40,000. The advance in the price of materials is now checking for a time the placing of some orders, but should trade continue in its brisk state there would be of necessity the placing of orders, while a retrogressive step would keep them back for lower prices. Looking to the fact that the orders which have been placed and are being executed are on a scale of probably greater magnitude than in any preceding year, and that the losses of vessels have been rather lighter of late, there would seem to be some danger of a repetition of the history of the trade six years ago. But, on the other hand, we have to recognize the fact that the building of merchant vessels abroad has been on a much more limited scale than it was at the former period, although there are now signs of more rapid construction. The speed of mercantile construction will be lessened by the number of ships of war, the orders for which have been placed in private shipbuilding yards both at home and abroad. But when due allowance is made for all this it would seem doubtful whether the shipping trade can long take up the large tonnage now building. There is, of course, the gratification of knowing that the tonnage which is removed from the register is being replaced by other vessels more economical in working and more efficient, so that we shall be better able to maintain our supremacy in the carrying trade even than we have been of late.

A discovery of zinc ore has been made at Newton, N. J., which is expected to yield 60 per cent. of pure metal, and is believed to equal in quality the zinc found at Franklin, 10 miles distant.

Radiation of Heat.

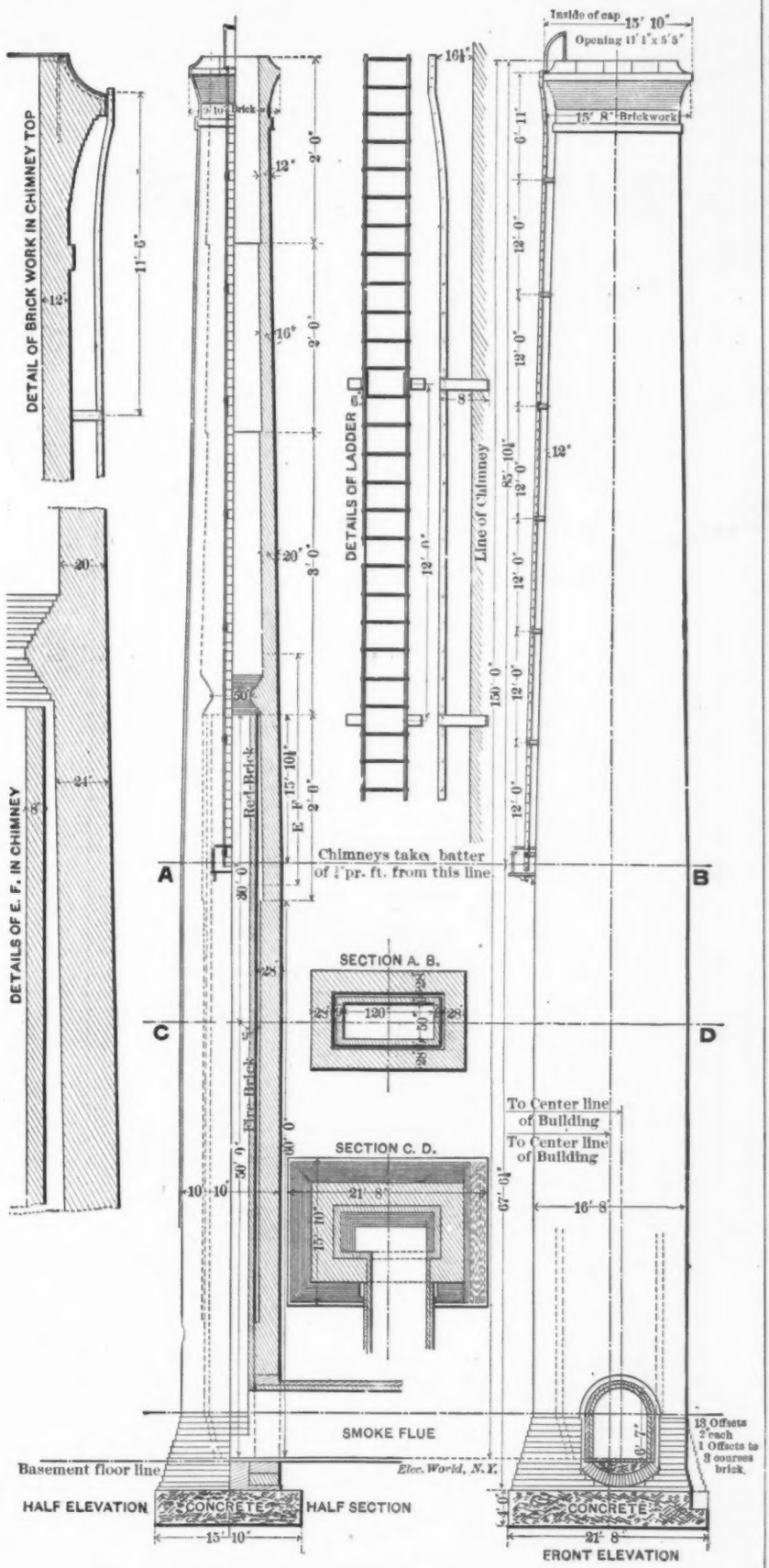
In the course of a paper read before a meeting of the Boston Electric Club, F. C. Child dealt with the subject of loss of power by radiation of heat, and condemned the use of low-price coverings for steam pipes, boilers, &c. Every unit of heat, he said, radiated by boiler-pipe, cylinder or heater is absolute loss. In an electrical plant this matter is of great importance. There is less opportunity to have results obscured. There is, proportionately, a large possible loss between the coal on the grate and the far end of the cylinder, and this loss should be reduced to the minimum. In low-pressure work for heating, where the steam is off the pipes a part of



Elevation.

CHIMNEYS AT EDISON CENTRAL STATION, BROOKLYN.

the year, many of the coverings become harboring and breeding places for vermin. Few appreciate the great loss of heat from uncovered or imperfectly covered pipes. Many have an indistinct impression that there may possibly be some slight loss. But there is in many cases an absence of knowledge upon this subject where it should be complete. The most correct data available show that the radiation from uncovered 2-inch steam-pipe, with 60 pounds steam pressure, is 391.83 kg. centigrade heat-units 1 foot one hour, or 21,739.78 kg. of coal for 100 feet per year of 300 days of ten hours each; 1 kg. equals 2.205 pounds. Properly combining these figures we see that there are 23.97 tons of coal lost by radiation from that uncovered pipe. If the coal costs $4 per ton, the radiation from this 100 feet of pipe will amount to $95.87. A good covering will save four times its cost each year. When contracts are not carefully made on the part of the purchaser then it is that some inferior non-heat conductor is used because it costs the contractor nearly nothing. The speaker went on to show, in an illustration supplied by the Lynn fire, that a pipe covered with the proper material will resist the flames and preserve the iron which it surrounds for future use.



Details.

CHIMNEYS AT EDISON CENTRAL STATION, BROOKLYN.

A New Outlet for Copper.

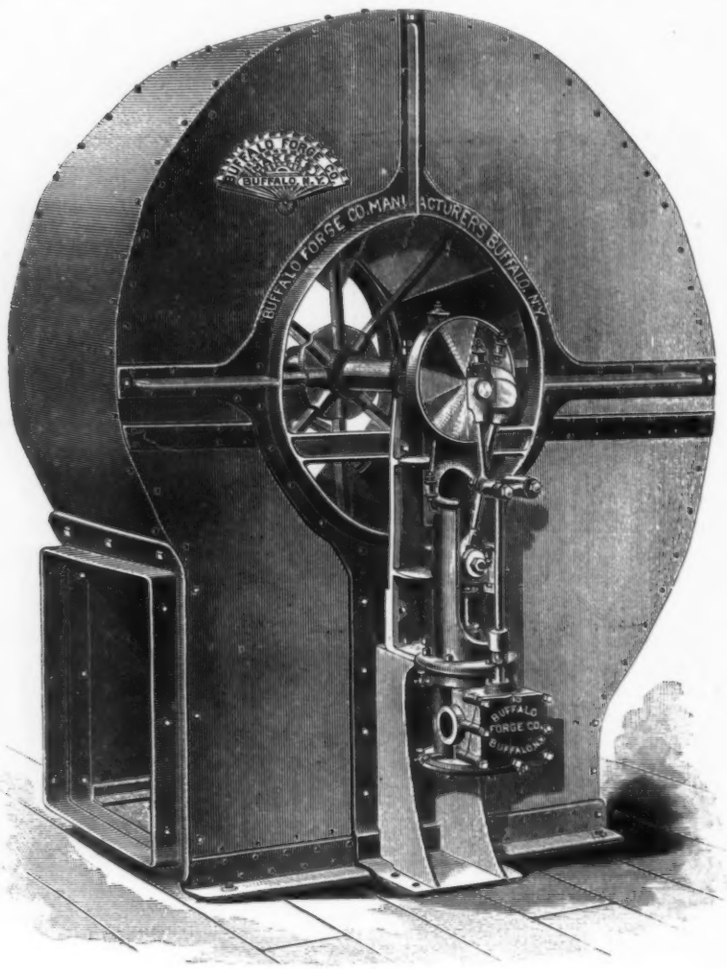
E. A. Pontifex, chairman of the famous Cape Copper Company, in an address to the stockholders called attention in the following words to a matter of the greatest interest to the copper trade. We quote:

There is one new outlet for copper, which, in addition to the large use of the metal for electrical purposes, promises to be a very important feature. I allude to its use in the form of sulphate of copper in vine culture. It has been found to be the only panacea for the phylloxera. We have ourselves, together with our friends of the Briton Ferry Copper Company, erected works capable of turning out a large quantity of sulphate of copper. The sales which we have already effected for present and future delivery will absorb 1000 tons of the metal, and we have advices from France that works are in course of construction there capable of turning out 40,000 tons of sulphate of copper annually, which is equivalent to using up 10,000 tons of copper a year. And it must be remembered that copper thus used is lost forever. It does not return to the maker as old copper for manufacture, with only some 8 or 10 per cent. of waste, as copper does which has been used for locomotive-plates or boiling-pans, or even pots and kettles. An increased consumption of over 10,000 tons a year for this one purpose—in addition to its use in the ever-swelling volume of trade and manufactures—must go a long way toward absorbing the greater output which higher prices may stimulate. I think, therefore, that we may fairly look forward to better prices than ruled before the French combination entered upon their disastrous campaign, and I am in a measure confirmed in this hope by the very prosperous condition of the iron trade, for it is an axiom with metal merchants and miners that iron carries nearly all other metals up with it.

The successes of the lake marine are a favorite topic at interior ports. The Chicago *Tribune* says: "The inland marine, representing an aggregate capital of $53,000,000, has carried during the season now closed 145,000,000 bushels of grain of all classes and flour reduced to grain, 6,700,000 tons of iron ore from the Lake Superior mines to the blast-furnaces, and brought back 4,200,000 tons of coal from Lake Erie. It has brought into Chicago 450,000 tons of general merchandise, valued at $50,000,000, and carried away 525,000 tons, valued at $10,500,000. It has brought to Duluth merchandise valued at about half that sum and carried away for Buffalo $15,000,000 worth. These figures, vast as they are, represent only the business of the inland marine between Lake Erie and Lakes Michigan and Superior. The great lumber trade and the local trade on the five great lakes, each representing a traffic of many tens of million dollars, are not included."

New Design Steam-Fan.

The accompaying illustration shows a new design of direct-attached engine employed in connection with the steam-



NEW DESIGN STEAM-FAN.

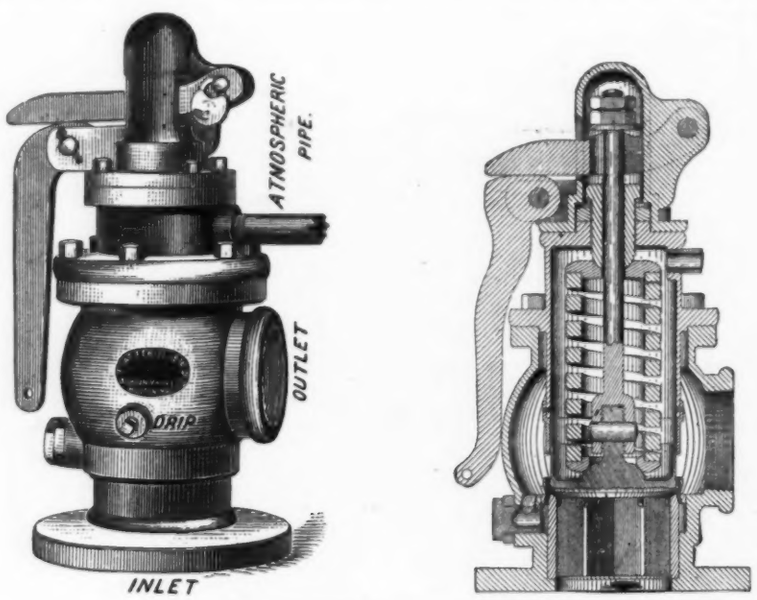
fans manufactured by the Buffalo Forge Company, of Buffalo, N. Y. The engraving also shows the steam-fan of the latest pattern. It is evident that the direct-attached engine affords superior advantages in fan propulsion, since there is no slipping or wearing of belts, the rate of speed is easily increased or diminished as occasion requires, perfect control of the fan as to starting and stopping instantly, and where economy of space is an object but little in excess of the fan itself being required, and this being less than that used with the pulley and belt. This engine is for either high or low pressure steam and runs with the least possible friction, having balanced valves, and is made in sizes ranging from 2 to 50 horse-power high pressure. By reference to the engraving it will be noted that while doing its work the engine acts as a brace to the blower, the base of which is made of the best angle steel. The amount of bearing surface is one of the engine's strong points considering its compact build. In a 100-inch fan the shaft is 3¼ inches in diameter and the bearings 15¾ inches long. It is claimed that this engine possesses the following qualities which adapt it to the work of direct fan-propelling: High speed, the ability to run continuously and ofttimes in the midst of considerable dust without requiring the engineer's attention at any regular time.

The State Factory Inspector in Connecticut has made his annual report. During the five months he has been in the office 245 factories and shops in which machinery is used have been inspected, with reference to ventilation, cleanliness, dangerous machinery and water-closets. One hundred and twenty-eight of the places were found to be in excellent condition. In 127 factories there were faults that needed to be remedied, and in all 206 changes were ordered. In most places where improved ventilation was ordered there were facilities for it. In some cases, however, in weave-work or textile factories, fresh air cannot be admitted without interfering with keeping the warp and filling damp. In these the atmosphere is extremely hot and injurious. It was found that there is much unprotected machinery in use, but owners of factories in general seem willing to provide appliances to protect life and limb. Careful attention had been given to elevators and hoistways.

Marine Pop Safety-Valves.

Much attention has recently been given to the use of pop safety-valves on marine boilers, not only on the sea-board but also on the lakes and rivers of the interior. The custom of cheap equipment for boilers has prevailed far too largely, the result being shown in explosions producing most deplorable results. In spite of the rigid inspection of the United States inspectors of steam-boilers these disasters occur, and in many cases are traceable to safety-valves of imperfect design and cheap construction. The valve of which we here present engravings may be made noiseless, as its construction permits the steam, when blowing off to relieve the boiler, to be piped down the inside skin of the ship to a point 2 feet below the water-line, from whence the steam is blown noiselessly into the sea. The advantage of doing away with the roar produced by the ordinary safety-valve when blowing off is apparent, since it abates a nuisance and relieves navigation of a decided peril. It is stated that these valves, the construction of which is clearly shown in the sectional drawing, are made in accordance with the requirements of the Government and are accepted by them. By means of the cam-lever motion the valve can be raised easily by hand when there is no pressure of steam to aid it. These valves are made by the Ashton Valve Company, of 271 Franklin street, Boston, Mass.

B. F. Jones, president of the Western Iron Association, at Pittsburgh, has been notified by letter that at a recent meeting of the Eastern Bar Iron Association, held in Philadelphia, a committee had been appointed to meet with a similar committee to be appointed by the Western Association and consider the revision of the card of extras now in use by the two bodies. The idea has met with much favor among the iron manufacturers at Pittsburgh, and it is very probable that a conference will be held shortly.



MARINE POP SAFETY-VALVE.

MANUFACTURING.

Iron and Steel.

The Coplay Iron Company, Limited, of Coplay, Pa., are making Stack No. 3 16 feet higher. Other repairs are also being made to it. When the improvements are finished the stack will be blown in. No. 2 is in operation, but No. 1 is idle.

The Sunbury Nail Works, of Sunbury, Pa., are now paying $4 per ton for puddling. A majority of the mills in Eastern Pennsylvania are now paying about the same prices as are paid in Philadelphia.

P. L. Kimberly & Co., Limited, proprietors of the Greenville Rolling Mill, at Greenville, Pa., are adding four new puddling-furnaces and a new boiler to the plant.

On the 24th ult. the Lackawanna Iron and Coal Company, of Scranton, Pa., notified their employees of an increase in wages, to take effect in their various plants and coal mines on the 1st inst. The increase will amount to about 10 per cent. It is also stated that the Scranton Steel Company, of that place, will give their employees a similar advance.

W. J. Hammond & Sons, of Pittsburgh, who recently disposed of their plant in that city, known as the Pennsylvania Iron and Steel Works, to the Baltimore and Ohio Railroad Company, have not yet decided upon a new location for a larger plant which they intend to erect. Some time ago a large tract of land was offered them at Mansfield, Pa., and it was supposed they would erect a mill at that place, but lately there has been a hitch in the proceedings, caused by the owner of the land wanting to put a road through the center of the plot, which the company objected to. It is quite probable that Mansfield will not secure the location of the mill, but that it will be some point on the Pennsylvania Railroad, as several good offers have been made in that direction. The new plant will consist of 24 puddling-furnaces, including the 14 they now operate, two pipe mills and three plate mills. With the 14 puddling-furnaces now operated at the old forge a very good output is made, equal, as is claimed, to the output of other establishments running 20 to 22 furnaces

Extensive improvements are now being made in the Bessemer-steel department of the Juniata Iron and Steel Works of Shoenberger & Co., at Pittsburgh. At present cupolas are used for melting the pig-iron used in the manufacture of steel of that class. The molten metal is carried from the cupolas to the converter by means of large iron ladles, which are hauled with swinging cranes. This system is to be done away with, and what is known as the direct process will be used after the necessary changes are completed. The two blast-furnaces attached to their mills are quite convenient to the Bessemer-steel department and the molten metal can be handled without much difficulty. The capacity is to be increased and another 5-ton converter added. There is only one converter of that size in use at present. The improvement does not mean that the capacity is to be doubled, but the product will be greater by 30 per cent. than at present. It is expected that the entire improvement will be completed by the 15th inst., at which time the mill will start up.

On January 15, 1885, Oliver Brothers & Phillips, the well-known iron manufacturers of Pittsburgh, failed, with liabilities amounting to over $1,500,000. They were granted a five years' extension, agreeing to pay the entire amount of their indebtedness in annual payments with 6 per cent. interest. Each one of these payments amounted to considerably over $300,000, and has been met as soon as due, the payment last year being made about 30 days before it was due. The last payment will be made about February 10 next, and will leave the firm with a high credit standing and a greatly increased and profitable business.

Announcement is made that the two blast-furnaces of the Chestnut Hill Iron Ore Company, at Columbia, Pa., which have been idle for about three years, are being repaired, preparatory to being put in blast. No. 3 goes in at once, while No. 2 will require about three weeks before it can be put into shape.

The Oliver & Roberts Wire Company, Limited, of Pittsburgh, who recently purchased the Bessemer-steel plant of the Hainsworth Steel Company, in that city, have contracted with the Equitable Natural Gas Company for a supply of fuel to operate the plant. The work of alteration at this plant is progressing rapidly, and the company expect to start up about February 1.

A dispatch from Beaver Falls, Pa., under date of the 27th ult., says: "George Layberger, formerly a roller at the rod mills of Carnegie, Phipps & Co., at this place, has formed a partnership with three wealthy gentlemen of Pittsburgh, and plans are now being drawn for an extensive rod mill, to be located here if the proper grounds can be secured. Several acres of ground have been offered to them free of charge north of this place, on the proposed line of the connecting link of the Baltimore and Ohio and Pittsburgh and Western railroads."

At Pittsburgh last week C. C. Dickey filed a petition in behalf of the Cherry Valley Iron Company, of Leutonia, Ohio, and others, against Graff, Bennett & Co., J. H. Bailey, assignee, and others, asking to have the sale of the firm's property set aside and the property resold. The petition asks that the court make a rule restraining the assignee from distributing the money in his hands among the creditors, for, in case the suit is determined in favor of the plaintiffs, he would have to refund the money to the first purchasers.

The Reading Iron Company, of Reading, Pa., have been experimenting with the steel manufactured by the Carpenter Steel Company, of that city, and have given the company an order for a quantity of it for the purpose of making pipe-cutters' tools. A test of a tool made of this steel was made at the pipe mill a few days ago. It was a tool for a ball lathe, and it turned a ball on which three of the old tools had been worn out. This tool is ¼ inch in thickness and 2 inches in width. The test was in every way satisfactory.

Spang, Chalfant & Co., of Pittsburgh, are about to enlarge their lap-weld tube department with another furnace, and will put in machinery to make 16-inch wrought-iron pipes, which is just double the size they have been turning out. The wrought-iron pipes of such dimension have largely taken the place of cast-iron ones used for gas and water mains.

The Glasgow Iron Company, of Pottstown, Pa., are continuing their improvements for increasing their output, and among other machinery have lately ordered a Ridgway Balanced Crane for unloading and weighing steel ingots. This machine will enable them to do the work of four men with one man and a boy.

A small fire occurred last week at the plant of the Bellaire Nail Works, at Bellaire, Ohio. Their water-tanks are located on top of the pumping-house, which is of brick. A wooden shed had been put on top of it to inclose the tank. This, from some unknown cause, took fire and was partially burned. The machinery was not injured, as the fire was entirely above it. The loss will amount to about $1000, fully covered by insurance. The fire occasioned no delay at the works, which resumed operations the next morning.

The National Foundry and Pipe Works, Scottdale, Pa., are increasing their capacity and are putting in a Ridgway Balanced Crane for dipping pipe, by which one man will be able to do the work now requiring three or four.

Among the recently authorized corporations in the State of Illinois are the following: Chicago Union Bicycle Company, at Chicago, to manufacture bicycles, tricycles, &c.; capital stock, $50,000; incorporators, B. S. Fogg, C. W. Watson and C. F. Hinman. Wire, Metallic and Electric Fence Company, at Chicago, to manufacture fence materials, &c.; capital stock, $500,000; incorporators, W. D. Rinehart, F. W. Haas and C. A. Scott. Kewanee Electric Light and Motor Company, at Kewanee, to supply heat, power and light; capital stock, $12,000; incorporators, C. E. Barry, J. K. Blish, and F. P. Pierce. The Wheeler Patent Can-Opener Company, at East St. Louis, to manufacture a can-opener; capital stock, $120,000; incorporators, E. A. Wheeler, John H. Bus and August Gubdlach. The Iron-Clad Dryer Company, at Chicago, to manufacture and lease steam-dryers of all kinds; capital stock, $50,000; incorporators, I. H. Mayer, A. Ascher and Charles Jindrich. The Chicago Spring Motor Company, at Chicago, to manufacture and dispose of a spring motor for propelling street-cars, &c.; capital stock, $1,000,000; incorporators, G. C. Kober, J. L. Perry and S. G. Clarke. The Illinois Whip Company, at East St. Louis, to manufacture whips; capital stock, $25,000; incorporators, M. A. Candel, W. R. Hill and J. P. Becker.

William Wharton, Jr., of Philadelphia, is president of the Columbia Mining Company, who will build an iron furnace at King's Mountain, N. C.

King, Gilbert & Warren, Columbus, Ohio, have recently contracted with the Alex Laughlin Company, Cleveland, Ohio, for an improved four-hole vertical soaking-pit, for use in their Middleport Steel Works. This pit is of an entirely new design, and will contain some radical improvements as compared with any heretofore constructed, these improvements tending to increase the tonnage and decrease the repairs, which have always been very heavy on this class of furnaces.

On January 6 next the plant of the Vulcan Forge and Iron Works of Long & Co., at Chartiers, Pittsburgh, will be sold. It is situated on the Ohio River and has excellent facilities for the receipt of pig-iron and ore by water, and for shipment of finished material to all points reached by the Ohio and Mississippi rivers. Being on the line of the Pittsburgh and Lake Erie Railroad, direct connection is made with the Lake Shore and Michigan Southern Railway, New York Central and Hudson River Railroad, New York, Lake Erie and Western Railroad and the New York, Pennsylvania and Ohio Railroad and the Baltimore and Ohio Railroad systems both East and West. The Pittsburgh, Chartiers, Youghiogheny Railroad, which runs through extensive coal-fields, crosses the edge of the property, and through it access is had to the Pittsburgh, Cincinnati and St. Louis Railway and all lines of the Pennsylvania Railroad. The mill and forge are modern in their construction and improvements, equipped for use of natural gas, of which there has never been any shortage. The plant can be put in operation at one day's notice. Regarding

the trade which the firm of Long & Co. have built up, their line of manufactures has been almost wholly in specialties for which there is a demand. Their regular customers, who are largely scattered throughout the Eastern and New England States, are awaiting the starting up of this plant to supply themselves with its products.

G. L. Reis, C. W. Livermore and O. W. Davis, Jr., have incorporated the Cumberland Gap Iron Company, Middlesborough, Ky. They will begin the building of a charcoal furnace in January.

Machinery.

The Canton Steam Pump Company, of Canton, Ohio, were lately reorganized, and, although various propositions to move the company's shops were considered, it was decided to remain in Canton, and they will be located in the plant of the J. H. McLain Machine Company.

H. K. Porter & Co., of Pittsburgh, builders of light locomotives, report a good demand for locomotives and motors. They have recently shipped motors to Tacoma, Elmira, Hoboken, San Francisco and Muncie, and locomotives to Worcester, Tampa, Newark and also for the Southern States and for export to South America. A few days ago they made telegraphic bids at the same time to the Pacific and Atlantic coasts and received telegraphic orders from each place within about six hours.

Davies & Thomas, founders and machinists, of Catasauqua, Pa., have recently received a contract for a large amount of castings for the Hudson River Tunnel Company, which, with a large amount of other work in hand, will keep them busy for some months to come. They have recently added several labor-saving machines and are running their works night and day.

The Harrisburg Car Company, of Harrisburg, Pa., have recently ordered seven of the Ridgway Balanced Cranes for their car-wheel foundry. These cranes will each save 55 cents per day in wages, increase the output 10 per cent. and expedite the work generally. This establishment is very crowded with work.

During the early part of December the National Iron Works of New Brunswick, N. J., shipped about 60,000 pounds of rubber machinery to Russia. Some months ago a large factory in Russia, that already manufactured a great many varieties of rubber goods, concluded to add to their present manufactures the making of rubber boots and shoes. They sent an expert in the line of rubber machinery to visit all the various rubber factories and the works of the manufacturers of rubber machinery in Germany and France, as well as in England, and he finally found his way to this country, placing his order with the above firm, whose design and construction was considered the best. The consignment sent, which only fills a part of the order, consisted of a large calender, a machine for making soles for rubber boots and shoes, and also one for forming the embossed uppers on rubber shoes, and also material for the putting up of one of Kelly's steam vulcanizers for curing boots and shoes.

The Walker Mfg. Company, of Cleveland, Ohio, have just closed a contract with the Denver Tramway Company, of Denver, Col., to put in eight of their patent differential drums in place of solid drums and idlers, which have only been in use about one year. They have also contracted to supply new tension-carriages and considerable other machinery.

During the month of November the Westinghouse Machine Company reached the "high-water mark," the sales of their Junior, Standard and Compound engines aggregating 104 engines of a combined horse-power of 7180. The Board of Directors recently declared a semi-annual cash dividend of 5 per cent., and it is thought that regular quarterly dividends of 2½ per cent. will hereafter be declared.

Chester Foundry and Machine Company, of Chester, Pa., are furnishing the cast-iron work, and boring-cylinders for Cramp's ship-yards, in Philadelphia, and at the Roach yards, in Chester. They also have in their shops a hydraulic testing-machine for the Phœnix Iron Company, said to be the largest ever built. It will test up to 2,160,000 pounds tensile strength, sufficient for the largest channel or beam ever rolled.

The Sioux City Engine Works (established in 1871) are about to move their plant to Leeds, the manufacturing suburb of Sioux City. Their principal business is constructing Corliss and medium speed automatic engines and boilers. Their capacity for the first-named is 150 engines per annum.

The Lodge & Davis Machine Tool Company opened an office on the 1st inst. at 64 Cortlandt street, New York, in which they will carry in stock a full line of all the iron and brass working tools manufactured by them. This step is due largely to the success attending the Chicago store since its opening in March last, and also a desire to promptly meet the demands for their tools in the East. The store will be under the management of H. W. Harrison, late of E. P. Bullard, who is thoroughly acquainted with machine tools and is well-known to manufacturers. The company have recently added largely to their works at Cincinnati, this step being made necessary by their inability to promptly meet the orders as fast as received.

F. E. Myers & Bro., of Ashland, Ohio, manufacturers of force and lift pumps, reversible wood and steel track, hay-carriers, pulleys, valves, &c., have just added the following tools: An 80-pound Bradley trip-hammer, a large iron-planer, two drill-presses, one lathe, blacksmith forge and a Bradley furnace. This foundry has also been equipped with three new Teeter molding-machines. The factory is run to its full capacity.

The Hooker-Colville Steam Pump Works, St. Louis, Mo., have just secured the contract to supply the Anheuser-Busch Brewing Association with two mammoth air-pumps. These pumps are the same pattern as the one recently purchased by W. & H. Walker, the soap manufacturers, of Pittsburgh, Pa. The Anheuser-Busch Association have also purchased four other Hooker brewery-pumps during the month of December.

The Broderick & Bascom Rope Company, St. Louis, Mo., manufacturers of wire-ropes for cables, &c., have recently secured the contract to supply cable for passenger-railway lines in San Diego, Cal.

Miscellaneous.

The Warder, Bushnell & Glessner Company, of Springfield, Ohio, who have recently acquired the sole right to manufacture the celebrated Champion mowers, reapers and binders, were on the Tuesday before Christmas the recipients of a very handsome piece of statuary representing "The Queen of the Harvest Field" from their 1000 employees. The letter accompanying the gift expressed the contentment and good-will of the employees and hope for the continued prosperity and happiness of the firm.

The Steel Die Mfg. Company, of Plainfield, N. J., have filed articles of incorporation. The capital is $1,000,000. The corporators are William T. Arnold, of Plainfield, and Edward Hatwood, Charles A. Senior, Jr., Robert C. Young and Bernard J. Secke, of New York.

A certificate of incorporation of the New York Marine and New Brunswick Steamship Company had been filed in Jersey City. The capital stock is stated to be $500,000.

The electric coal mining machines built by the Jeffrey Mfg. Company, of Columbus, Ohio, are now in successful operation at Shawnee, Ohio; Jobs, Ohio; Thurmond, W. Va., and Cannelton, Pa. Other plants are also being erected at Fairmont and Parkersburg, W. Va. The manufacturers state that this is the only electric coal-mining machine now offered to the public which is in daily successful operation. Their electric haulage system is also in constant use and giving perfect satisfaction at Shawnee, Ohio, and Thurmond, W. Va.

The Kentucky Wagon Mfg. Company, of Louisville, Ky., who a year ago bought out Cherry, Morrow & Co., manufacturers of the Tenessee wagons, at Nashville, Tenn., have just contracted with a Nashville company for the latter to manufacture for and under the supervision of the former company the brand of Tennessee wagons. The Nashville parties have purchased the plant and machinery originally used by Cherry, Morrow & Co., but not the brand and patterns, which remain the exclusive property of the Louisville parties. The works at Nashville will really be a branch factory and will be operated night and day, turning out Tennessee wagons for territory south of Nashville. The country north and west will be supplied from the main factory at Louisville.

The lubricator for shafting built by the Swain Lubricator Company, of Boston, Mass., consists of a cup formed of a tube and tight-fitting cap, which is inserted in a hole drilled in the cap of the box. Within the tube is a weight arranged to move freely and which presses the lubricator in the form of a solid stick against the shaft. Extending through the cap of the tube is a rod attached to the weight and which serves to indicate the exact amount of lubricating material in the cup. The lubricator is kept in direct contact with the shafting and is worn away only as the shaft needs lubrication. It is stated as there is no drip or waste of material, and that as wear of the lubricator only occurs when lubrication is necessary, a single lubricator will last from one to three months.

The Country's Wealth.—The *World* has obtained from the Treasurer of each State the value of property as assessed for taxation. The Census Office in 1886 made a report of its exhaustive and laborious inquiry into the proportions existing in each State between taxed property and actual wealth, which ranges between 25 per cent. in Illinois and 68 in Wyoming. The *World's* report shows an increase in taxable property of $6,963,000,000 and an increase in actual wealth of $18,162,000,000 since 1880. The total wealth is $61,459,000,000, exclusive of the public property and $3,093,000,000 property invested and owned abroad. The assessed value of taxed property and our actual wealth at different decades has been:

	Assessed value.	Actual wealth.
1850.....	$5,287,613,148	$13,652,499,739
1860.....	12,084,500,005	31,201,310,676
1870.....	11,342,789,366	30,068,518,507
1880.....	16,902,993,543	43,642,000,000
1889.....	23,719,000,000	61,459,000,000

The wealth of the United States now exceeds the total wealth of the whole world at any time previous to the middle of the eighteenth century, and the amount invested abroad is alone equal to the national wealth of Portugal and Denmark. The total wealth of only five nations is equal to the mere increase of the United States in the past nine years.

OBITUARY.

HENRY W. AUSTIN.

Henry W. Austin, a Chicago pioneer and philanthropist, died quite suddenly at his home in Oak Park, near Chicago, on the 24th ult. Mr. Austin was born August 1, 1828, in Owasco, Onondaga County, N. Y., and was therefore 61 years old. He was married October 3, 1859, to Martha Sophia, daughter of James L. Boorhees, Syracuse, N. Y. He had taken up his residence the year before in Chicago as the representative of several hardware manufacturers. His relations to these manufacturers lasted 25 years. The firm name was Goulds & Austin. He met with great success and invested his profits largely in real estate. He established the suburb of Austin in 1866, since when it has become a prosperous settlement. Austin owes much to him. Long years ago he gave the village $10,000 in land and money for a public library. He also presented to it a strip of land half a mile in length along the railroad to be converted into a park. Mr. Austin also established the first hardware store in Kansas City when that place was known as Westport Landing. He was a strong Prohibitionist. It is due to his efforts that prohibition now obtains in Oak Park. In 1870 he was elected to the Legislature. He prepared and introduced the bill known as the "Illinois Temperance Law." It was passed and went into effect in 1872. Mr. Austin had not been in active business for six years. The firm name is now the Goulds & Caldwell Company. Mr. Austin was not a church member, but he gave liberally to different denominations, and was deeply religious not only in his sentiments, but his actions as well. His charity was known far and wide. Many have been helped to little homes by Mr. Austin, and it is said of him that he never had the heart to foreclose a mortgage and never refused to help the worthy and the needy. His widow and two grown-up children survive him.

CHARLES ALBERT ASHBURNER.

Charles Albert Ashburner, the geologist and mining-engineer, died at Pittsburgh on the 24th ult. Mr. Ashburner was born in Philadelphia on February 9, 1854, and graduated at the University of Pennsylvania in 1874, ranking first in his class. During the summer of 1872 he was engaged on the survey of the Delaware River, and after he was graduated he accepted a place in the Light-House Survey Service. In 1874 he became an assistant of Prof. T. P. Lesley, the head of the newly organized Geological Survey of Pennsylvania. He was actively employed during the latter part of 1874 in the surveys of Mifflin and Juniata counties, and in 1875 he was appointed assistant geologist, with charge of the surveys of McKean, Elk, Forest and Cameron counties. In 1880 he was appointed assistant geologist, with charge of the survey of the anthracite coal fields, where he originated a method for surveying and representing the geology of this great coal bed which has received the approbation of mining-engineers in the United States and Europe. The ability and skill with which this undertaking was performed led to the appointment of Mr. Ashburner in 1885 as geologist in charge of all the office and field work of the survey. Mr. Ashburner was a member of the American Philosophical Society, the American Institute of Mining Engineers and other scientific societies, to whose proceedings he contributed valuable papers. He also contributed to many scientific and technical journals and prepared many reports of the Geological Survey of Pennsylvania. He was for years in charge of the coal statistics published annually in the "Mineral Resources of the United States Geological Survey." At the time of his death he was special agent of the Eleventh Census in charge of the coal statistics of Pennsylvania.

The Illinois Steel Company.

(*By Telegraph.*)

CHICAGO.—The Illinois Steel Company report the following business in 1889:

Capital issued	$17,622,600
Number employed	9,247
Total wages	$4,577,000
Value of product	19,000,000
Pig metal produced, tons	572,095
Rails, tons	461,147
Wire, tons	43,488
Merchant Bar and Nails, tons	60,230
Billets, tons	50,289
Spiegel and Ferro-Manganese, tons.	18,031
Beams and Slabs, tons	4,030

They consumed 775,000 tons of Ore, 675,000 tons of Coke, 140,000 tons of Coal and 200,000 tons of Limestone. The Chicago Furnace Company made 55,000 tons of Pig-Iron.

Homestead Wages.

(*By Telegraph.*)

PITTSBURGH.—The new scale of wages for the Homestead Steel Works of Carnegie, Phipps & Co., from January 1 to March 31, was arranged yesterday. The men receive an advance of 16 per cent.

The American Geological Society, at their annual meeting, held last week in the lecture hall of the Museum of Natural History, elected officers as follows: President, James D. Dana, of New Haven; vice-presidents, J. S. Newberry, of New York, and Alexander Winchell, of Michigan; secretary, John J. Stevenson, of New York; treasurer, Henry S. Williams, of Cornell Univerity; Executive Council, J. W. Powell, of the United States Geological Survey; George M. Dawson and Charles H. Hitchcock, of Dartmouth College. The number of scientific papers prepared for reading and discussion was very large.

The board, consisting of Chief Engineers Charles H. Loring, George M. Magee and George W. Roche and Passed Assistant Engineer J. J. Barry, appointed to conduct a series of tests of coil boilers and report on their suitability for use in large vessels of the navy, are at Charleston, W. Va., testing a boiler submitted by Charles Ward, of that place. The only other boiler that has been submitted was built by William S. Cowles, of New York. It will be tested at an early date.

The year 1889 has been a phenomenally good one for agriculturists in the Southern States and that part of the country is prospering perhaps as never before. The two great crops, cotton and sugar, are extraordinary. The latter, it is now reasonably certain, will be the largest ever gathered. The New Orleans *Times-Democrat* says: "There yet remains some cane to grind, and it will be months before the cotton is all accounted for, but we know enough of the yield of both to estimate closely the value of the farm products raised in the South this season. A careful estimate, based on the reports of the United States and State agricultural departments, puts the total value of farm products for the twelve Southern States at $946,824,500, as against $611,679,048 in 1880, a pleasant improvement of $335,145,452, or 54.7 per cent. during the decade. Texas has fared especially well, and so have Kentucky, Tennessee, Arkansas, Mississippi and Louisiana. The Atlantic States have suffered some set-backs, but, taking the whole South, the agricultural season has been a particularly prosperous one."

THE WEEK.

The American mails to Europe might be handled more expeditiously by landing them at Holyhead rather than Queenstown, and the principal steam-ship companies are said to favor the change.

The Importers' and Grocers' Exchange, of this city, after about seven years' existence, will be dissolved under a receivership. It was incorporated to foster trade and commerce in groceries and East India and South American products, to protect such trade from unjust and unlawful exactions, to reform abuses in such trade, to diffuse accurate and reliable information, but aside from making a "corner" in Japan tea soon after it was organized, seems to have accomplished little.

The submarine torpedo-boat invented by Isaac Peral has been successfully operated in the harbor of Cadiz, remaining entirely submerged for an hour and a half and at a considerable depth. The boat is equipped with electric storage batteries.

The dredging-machines of the New York Dock Board appear to have done effective work in relieving the city treasury of surplus cash. Excavations, according to charge made, have been paid for at exorbitant rates. Mud has been dumped into the river again and again after being taken out. Payments were made for work never done. Again, it is charged that bribery was resorted to in leasing the wharves and piers. In numerous cases wharfage was not collected, or at least not conveyed into the city treasury. Specifications relating to these various charges of malfeasance have been drawn up for examination and proof by direction of Mayor Grant, and radical changes in the *personnel* and control of the Dock Board are supposed to be impending.

French capitalists are said to have captured Guatemala by obtaining a concession for a railroad across the country from Livingstone, on the Atlantic, to Guatemala City, there connecting with the Guatemala Central Railroad to the Pacific. The latter was formerly owned by C. P. Huntington and others, of New York, but the Frenchmen have now succeeded to their rights and privileges by paying $4,000,000. According to the statements made the sale of this railway removes from Gautemala the only large American interest in the country, and puts the Germans, with their coffee investments, and the French in practical control. The Lefevres advance about $22,000,000 to build the line, the Government of Guatemala issuing an equal amount of 6 per cent. guarantee interest bonds, but the French are to control the road for the first term of 40 years. Of imports to Central America from the United States San Francisco now skims the cream, because the difference in freight from there down makes that a cheaper buying market than New York. The new railway will reverse this, and New York will supply not only the eastern but the entire western coast of Central America.

A gentleman of this city, whose name for the present is withheld, offers to give $250,000 for the erection of a new Presbyterian hospital, the building to be absolutely fire-proof, on condition that an equal amount be raised from other sources.

It is reported from Topeka, Kan., that farmers in that State are using corn for fuel, and that thousands of bushels have been consumed in this way.

The contemplated dry dock and other improvements at St. John's, N. B., for which New York capitalists have obtained a contract, are of an important character, the expenditure involved being

$1,000,000. In prosecuting the work James D. Leary, of Joggins raft fame, has associated with him Jean Felix, merchant, New York; Uzal O. Crane, iron merchant, New York; Thomas Cochrane, Philadelphia; Cornelius Beard, Boston; William Van Slooten and Charles Sooy Smith, civil engineers, New York. The city grants for the required purposes a large tract of land known as Sand Point, and agrees to pay a subsidy of $10,000 per annum for 20 years.

Costa Rica has ratified the terms for Central American union as agreed upon by the late Congress. This fact is regarded as substantial evidence that the plan for establishing a new republic will be generally approved, and as giving assurance that a more prosperous future awaits the several countries which in past years have too often wasted their resources in vain struggles for pre-eminence one with another.

Ship-building in New England during the year 1889 has prospered and the coming year is expected to be equally good. The *Boston Journal* says: "New contracts for building are heard of almost every week from various ports on the New England coast; and they show plainly that the vessels to be built will, as a rule, be larger than heretofore." Large four-masted schooners are as much in favor as ever. They are great carriers and have been profitably employed. Maine has surprised her own people, the launches having numbered more than four score. East Boston, too, has a fair record, although Massachusetts had built with moderation compared with some former years.

The United Kingdom loses 2500 men a year in missing vessels, but marine disasters are less frequent than before the adoption of the Plimsoll load-line, and like measures designed for the security of life and property at sea. An English paper says: "Rotten ships, leaking like sieves, have been inspected, arrested, condemned, broken up. Under the act for the condemnation of such unseaworthy craft over 4000 ships have been abolished. The terrible system of loading even large ocean-going vessels with grain or with seed carried loose in the hold, there to shake down and roll about from side to side like a fluid, has been put an end to. One day in the fall of the year seven large ocean-going steamers left the port of Montreal, the whole of the seven carrying grain in bulk. Only two out of the whole fleet arrived at their destination. The other five carried to the bottom of the Atlantic the produce of uncounted acres. They also drowned their men. It was to save the expense of using the shifting boards required for safety that the seven big steamers risked annihilation. The fate of five of them led to the prompt amendment of the Port Wardens Act at Montreal."

In Maine there is much anxiety respecting the winter's ice crop, and the logging season is the worst in 30 years, in the absence of snow.

The New York Legislature will meet in a few days, and by the second week in January is expected to get down to work.

Col. Robert Stanton and his corps of civil engineers are on their second perilous journey down the Colorado River for the purpose of determining the feasibility of building a railway by this route to the Pacific Coast.

Newfoundland has a great salt-water fish hatchery, with the object of arresting the decline in the cod fisheries. All the latest improvements in hatching known in Norway and the United States have been introduced. The establishment is capable of hatching out every season 200,000,000 of cod ova, the young fry to be set free in the sea, thus restocking the two great bays, Trinity and Conception, where the cod has been almost exterminated, compelling the fishermen to resort to the coasts of Labrador at much expense, encountering severe hardships.

Egypt will not be evacuated by the British military forces, either in whole or in part. In the pending negotiations with France the Marquis of Salisbury claims that the retirement of the forces would be followed by the overrunning of Egypt from the Soudan.

The Japanese ministry has been reconstructed for the purpose of introducing European methods. Count Yamagata Aritorno, hitherto Minister of the Interior, becomes President.

Immigration is falling off. Statistics from the bureau at Washington show that during 11 months ended November 30 there arrived in the United States only 407,237 aliens, a decline of 91,354 as compared with the corresponding period in 1888.

Nova Scotia's coal output last year amounted to 1,205,000 tons, of which 745,000 was from Cape Breton and 460,000 from Sydney. This is a very large gain on former years.

The Dominion Commercial Travelers' Association, numbering 2054 members, had a grand banquet at the Windsor Hotel, in Montreal, 23d ult. The mayor of the city and prominent citizens participated. Among the speakers were United States Consul-General Knapp and several members of Parliament.

The Reading Railroad Company have taken the initial step toward establishing a transatlantic freight line between Philadelphia and London, by organizing the North Atlantic Steamship Company. The business of the company is to charter vessels arriving at this port to unload, like those bringing iron ore from the Mediterranean, and provide freight for the return. Two steamers have already sailed with full cargoes, and two more are announced to sail under an arrangement with the New York and Erie, and Baltimore and Ohio and their Western connections. In this way local shippers will enjoy better ocean facilities. The plan contemplates important improvements at Port Richmond, which the company intend to make one of the most complete terminal points in the United States.

At least six fast new ocean steamships will be put on the track between the United States and Europe during the coming season.

The franchises, privileges and properties of the St. Louis Gaslight Company have been sold at auction and purchased by the Laclede Gaslight Company for $4,000,000.

Contrary to reports, it is affirmed positively that the flouring mills in the Northwest have not been transferred to an English syndicate. The proposed sale of the Washburn Mills property would have placed the flouring interests of the Northwest practically under foreign control.

More than $10,000,000 has been expended in new buildings in St. Paul during the past year. The wholesale trade foots up $107,137,648, and a manufacturing output of more than $52,000,000 indicates a period of remarkable prosperity.

Secretary Tracy directs that the cruiser Baltimore be accepted.

Congraleaff and Kondzatovitch, Russian civil engineers, sent by their Government to inspect railway construction in Canada, have arrived in Ottawa. The Russian Government desires to build a great railway through Siberia, which, with waterways, will give complete communication between St. Petersburg and the Pacific Ocean. The visiting engineers chose the Canadian Pacific Railway as a model, on account of its great length and of the marked similitude of British Columbia's mountain region and the plains of Manitoba to those of Siberia.

In relation to the admission of emigrants ex-Congresman Hepburn, Solicitor of the Treasury, says that as soon as the contract with the State of New York ends in February the National Government can take charge of immigration at New York and supersede the present Board of Immigration, and that no new legislation is needed to effect this object.

Charles W. Pierce, superintendent of lamps of the Brush Electric Light Company, was indicted by the Grand Jury for manslaughter in causing the death of Henry Harris by an electric shock in front of No. 695 Eighth avenue on November 7. He was held in $2,500 bail.

A. C. Reed, a prominent merchant of Yokohama now on his way to New York, says the only agitation in Japan is caused by a wide opposition to the proposed revision of the treaties with European and American powers. The most general opposition is caused by the proposed concession that foreigners may go anywhere, reside in any place in the empire, or own land, or engage in any business. The larger part of the empire still retains much repugnance to the admission of foreigners.

Noise as a Nuisance.—Among the cases recently decided by the Appellate Court of Illinois was one of some interest to manufacturers whose machinery makes considerable noise. A number of people recovered judgments against the Chicago Forge and Bolt Company for depreciation of property on account of noise, smoke and jar of the furnaces and steam-hammers belonging to the company. The court below refused to instruct the jury that if the defendants showed that the value of adjacent property had been enhanced instead of being diminished by the presence of the works, then there must be a verdict for the defense. Instructions were also refused that if the jury believed that the operation of the works did more good to property than the smoke did injury a verdict for the defendants must be returned. Because these instructions were not given Judge Gary reversed the judgment.

William Weihe, president of the Amalgamated Association of Iron and Steel Workers, returned to Pittsburgh last week from a visit to Montreal, Canada, where he organized a lodge of the above named association, composed of puddlers, rollers, heaters and scrapers from three rolling-mills at that place. They will be invited to attend the next convention of the Amalgamated Association to be held in Pittsburgh in June next.

R. A. Cook, of 83 Washington street, New York, has sold the exclusive right to use the Wenstrom magnetic separator in Essex County, New York, to Wetherbers, Sherman & Co.

The Shickle, Harrison & Howard Iron Company have been awarded a contract at Pueblo, Col., that will amount to about $50,000. The contract is 662 pieces, more or less, of 24-inch cast-iron water-pipe, to be used in conveying water from the mesa reservoirs to the pumping-station in that city. The price per ton charged was $41.60. The new reservoirs are two miles west of Pueblo, on the Arkansas, and the total value of the improvements being made on the north side water plant will run nearly or quite $165,000 when finished.

The Iron Age

New York, Thursday, January 2, 1890.

DAVID WILLIAMS, - - - PUBLISHER AND PROPRIETOR.
CHAS. KIRCHHOFF, JR., - EDITOR.
GEO. W. COPE, - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS - - HARDWARE EDITOR.
JOHN S. KING. - - - - BUSINESS MANAGER.

Prospects for 1890.

Never before in its history has the iron trade entered a year on a sounder basis and with better prospects. Practically independent of foreign markets with the exception of some specialties and of manganiferous material, we enter the new year with a very active demand and, fortunately, with a producing capacity which seems likely to be able to take care of our requirements, even if largely expanded. It is not too much to say that so far as human foresight can peer into the future, the day has come at last when American iron-masters can truly say that whatever demands are put upon them within reasonable limits they can meet at prices which do not involve the slightest hardship to the consumer. The developments of the past year have amply justified the contention of those who claimed that if given a fair opportunity American enterprise would so utilize our great resources that our markets would become independent of the manipulations of foreign producers.

It is frightful to contemplate the condition of affairs which would now obtain if we were to any marked extent dependent upon the European markets for any considerable part of our requirements of iron and steel. If only a fraction of our consumers had to look to English makers for their material the prices in all the markets of the world would to-day be at figures compared with which present values would seem beggarly. Where would our ore supplies have come from had not hardy pioneers penetrated the swamps of the Vermilion range or scoured the woods of the Gogebic? Where could we obtain an adequate quantity of Bessemer pig if our manufacturers had not pluckily added new plants and carried old establishments to the latest perfection? How could we meet the demand for rails and a multitude of articles produced from soft steel if restless American energy had not made the American Bessemer mill, the American open-hearth plant, the wonder of capacity which it is to-day? How could we to-day feed the foundry and the puddling-mill had not enterprise which seemed foolhardy to many planted dozens of modern furnaces in Virginia, Alabama and Tennessee?

Let it be remembered that the enormous development in our resources during the past five years has gone on in the face of a depression over the entire world which apparently crushed out the life of enterprise in England particularly. Let it be remembered that all this was done in the face of adversity. Far from being paralyzed by meager profits, our iron-masters were stimulated to redoubled efforts in devising new labor-saving methods, in improving appliances and in lowering costs by preparing to manufacture on a larger scale.

It is to this spirit that we owe to-day our immunity from the evils which would grow out of the craziest boom the world has ever seen. We may go further still and justly claim that all iron and steel consuming nations owe to us a debt of gratitude. Beyond a question a period of great prosperity is assured to the iron and steel trades of the United States at least for the first half of the year 1890, with the prospects very bright for the second half. Should developments continue favorable during the first quarter, then there is the possibility of a further very sharp advance which may degenerate into a boom.

The English Iron Trade.

The course of the English iron market during the last six months has been a puzzle to the majority of those engaged in the industry in this country. The usual explanation offered has been that an increase in the demand, for which the first impulse came through the large ship-building orders, stimulated the liveliest speculation. Starting with that idea our iron trade has, we believe, quite generally, been prepared to learn at any day of a tremendous drop in warrants, followed by a complete collapse of the "boomlet." An analysis of the exports simply showed from month to month that our friends on the other side of the Atlantic were doing very little more than making up for their loss of business with us by larger sales to other countries. Thus, the figures for the exports of the first 11 months of the last three years showed the following:

	1889.	1888.	1887.
	Tons.	Tons.	Tons.
Pig-iron.....	1,116,040	966,947	1,062,637
Railway iron..	998,177	940,980	914,840
Manufactured iron, &c....	1,759,167	1,763,596	1,819,188
Totals.....	3,873,384	3,671,523	3,796,665

These figures certainly do not reveal any very wonderful progress. But it is pointed out that the English home demand has developed very considerably. It is estimated that the quantity of pig-iron in the foundries and iron ore has increased from 6,190,000 tons to 7,052,000 tons in 1888 and to at least 7,750,000 tons in 1889. It was known that the enormous stocks in Great Britain were being drawn upon. Yet all these facts did not seem to suffice to distant observers to justify the very large advance which has taken place. It only quite lately that some of the deeper lying causes for the rise are coming to the surface; some of them are now being touched upon by the English trade papers, others we gather through inquiry among men in this country who are familiar with the English industry and its *personnel*.

To begin with, it is probable that during the long depression very little capital was put into extensions, improvements and new plant in England, relatively speaking. The demand has gradually crept up to capacity. Another serious matter seems to be that the opening out of her mineral resources has not progressed much, if at all. This is shown by the sudden scarcity of coke in the famous Durham district, where the price has risen to $6 and $7 at oven. To-day an increase in the production of pig-iron is practically impossible for this reason, in spite of the fact that dozens of furnaces could be put into readiness for work at an early date. Nor have the openings in the iron mines kept ahead of production during the past few years sufficiently to provide for a sudden increase in the demand. This seems to be the case not alone in England proper, but also in those foreign districts from which she draws her principal supplies.

But the most serious obstacle to an increase in the production seems to lie in the attitude of labor. It is claimed, and there are good reasons for believing the claim to be justified, that English workmen look at life in a manner differing very widely from the views held by our own men. As one iron-master has tersely put it in a letter lately published in an English trade journal, "the more money the men get for their labor the less they are inclined to work." If they can get what they consider adequate earnings in four days they will not work five or six, and certainly will not put in overtime. We do not believe that they are charged with this reproachfully. They certainly have a right to act on that principle, if it so pleases them. But it is an important economic fact that many of them do so act. It is a fact which is of the greatest significanse to producers in iron and steel and consumers thereof in all parts of the world.

It is plainly stated in English journals that the leaders of the men have not alone decided that shorter hours must be the rule, but that they are deliberately following the policy of restricting output of iron in order to force into consumption a large part of the accumulated stock, the existence of which they consider a menace to their aspirations. If the causes alluded to really have contributed largely to stimulating the advance, and there are good reasons for believing that they have had a share in it, then there is placed permanently upon the English iron industry a burden of cost which will render our competition against it much easier.

Russian Petroleum Production in 1889.

For over a year past Russian refined petroleum put up in tins and cases in every way like American has begun to seriously compete with the latter in China, Japan, British India and Java, where for the past 20 years we have been doing an enormous and on the whole quite remunerative business, in Java in particular. The competition in Europe has been less felt. In Western Europe we have stood our ground well, but less so in Mediterranean Eastern countries. Russian firms and Nobel Brothers have displayed such energy in pushing abroad their product, crude and refined, imitating American ways very closely all along while so doing, that we have every reason for being on our guard and preventing if possible our being ousted altogether from some of the markets we have made the greatest efforts to secure. It is admitted on all hands, however, that our standard brands of refined oil are better in quality than the Russian, and the quotations in India, &c., show that it commands a better price. But the greater cheapness of Russian has in a country like Hin-

dostan the advantage of throwing it open to the poor population, which constitutes the great mass of consumers in the rural districts. The Russians have in all the Eastern consuming countries established lamp stores in which the common as well as more expensive lamps may be had. They are specially designed for burning their kind of oil. A fleet of steamers leaves Batoum for Madras, Bombay, Calcutta, Batavia, China and Japan loaded down with oil in cases, while we ship thither by sailing-vessels, not having any steamers in the trade so far East. As compared with American general petroleum export that of Russia stood 10 to 90 in 1886; in 1888 it stood 28 to 72. The consumption of American petroleum at home, in Europe and South America has, however, increased so much during the last couple of years that prices for crude and refined on this side have been well sustained, although our means of production have and will be steadily expanded particularly this year from the fact that enormous areas of petroleum lands have recently been acquired by large, energetic companies. In other words, while we produce more than ever, the increase of our own population and of our foreign trade prevents the accumulation of stocks, and we do not feel it if one or another distant market loses some of its importance for us.

During the summer advices from Baku, the center of Russian production in the Caucasus, were to the effect that that region gave signs of exhaustion, and indeed in May only 175 wells were producing, showing a sudden falling off. This caused some alarm, but in the middle of October 207 wells were again in operation, 71 additional drilling, 24 new wells had commenced to yield oil and 61 had been abandoned because exhausted. The total yield of crude was 153,000,000 puds of 36 pounds American in 1888, showing a monthly average of 12,750,000 puds. During the first eight months of 1889 the yield was 123,000,000 puds, or 15,375,000 per month. August alone showed a greater production by 8,000,000 puds than the corresponding period in 1888. The increase in the output is particularly due to a lessening in the waste, however. In 1888 Russia exported 28,000,000 puds; during the first six months of 1889, 18,000,000, and it is estimated that for the whole of 1889 an export of 35,000,000 puds has been reached.

The oil is conveyed to Batoum by the Transcaucasian Government railroad on the one hand and by Nobel Bros'. pipeline on the other; now three new pipelines are to be laid on shares, and $150,000 gold were subscribed at once toward these undertakings. It should be remarked, however, that the area of the Baku plateau producing oil is comparatively small and that the depth of the wells till oil is struck has continually to be increased. The maximum depth of pumping-wells is 1006 feet, the average 546 and the minimum 189. The maximum depth of running-wells is 1022 feet, the average 826 and the minimum 637 feet. The drilling is half as slow as in the United States, hence the growing depth before oil is struck is an item of expenditure heavily weighing on those engaged in that kind of enterprise, and this notwithstanding the fact that the best and most improved machinery is in use There are at present 61 firms engaged in oil production near Baku; 3½ puds of crude oil yield 1 pud refined and 2 puds residue used as fuel or lubricating oil. Russia's consumption of refined was 20,000,000 puds in 1888.

Tariff Hearings.

The Ways and Means Committee of the House began its hearings on Thursday, December 26.

George H. Ely, president of the Western Iron Ore Association, who were organized eight years ago, was the first speaker to address the committee. He urged the retention of the duty on iron ore. The duty of 75 cents a ton, he said, had promoted the iron and steel interests of the United States in a remarkable degree. As an instance of this beneficent effect he cited the production of the Gogebic district, which had increased from 1000 tons in 1884 to 14,000 tons during 10 months of 1889, and of the Minnesota district, which had increased within the same time from 62,000 to 800,000 tons. In 1886 the total production of American mines had been 10,000,000 tons, while the estimated production for 1889 was between 14,000,000 and 15,000,000 tons. The question of duty, Mr. Ely continued, was a question of wages. In the Spanish mines the hours of labor were 72 hours a week; in the Lake Superior region the hours were 55 hours a week. In Spain the wages of drillers and miners were 60 to 72 cents a day, and of common laborers 36 to 50 cents; in the Lake Superior mines the wages for drillers and miners were $2.25 to $2.75 a day, and for laborers $1.60 to $2. He believed in the protection of American labor and in keeping up the rates of wages to American workingmen. If the range of wages was ever to increase in England, that country would have to change its policy. He did not ask for any increase of duty, but he earnestly urged the retention of the present rate. The duty had operated to make up part of the difference between the wages at home and abroad

George Tobey read a long memorial prepared by New England manufacturers of iron and steel, and he contended that the present tariff on iron ore and coal was prejudicial to the interests of the Atlantic Coast, while it discriminated in favor of the Western Pennsylvania section. It was not just that there should be such a tariff rate as enabled one or two States to kill out the iron interests of other sections. New England should not be forbidden by the tariff laws to enjoy the advantages which her location on the sea-coast naturally presented. She should not be set back in civilization by the impediment arising from the want of cheap iron and steel. Massachusetts asked for cheaper raw material. Her contest was not with England, but with highly-protected Pennsylvania.

In response to questions by Mr. Bayne Mr. Tobey stated that the abolition of duty on coal would stimulate work on the Canadian coal-fields; but he thought that any bad effect which might result to the coal-miners of Pennsylvania would be more than compensated for by the increased business which would be done in the New England States. Mr. Gear inquired as to the general position which the witness held to the tariff, and received the reply that Mr. Tobey thought that no horizontal reduction should be made.

F. S. Witherbee, of New York, president of the Eastern Iron Association, argued that the chief obstacle to the development of New England manufactures was the almost prohibitory freight rates charged by the New England railroads. The manufacturer's interest would be best protected by keeping a steady duty on the raw material. That duty stimulated the mining industry. If it was removed capital would be intimidated. At the end of Mr. Witherbee's argument the committee took a recess of 30 minutes.

After the recess the committee heard statements from V. K. Moore and Powell Stackhouse, of Michigan. The questions directed to them by members of the committee were intended to draw from them information as to the amount of labor and of capital contained in 1 ton of iron ore. Their responses, however, were no more satisfactory than those given by the gentlemen on the stand before the recess, all declaring their inability to give a correct answer, owing to the varied conditions of different mines.

J. J. Dominies, of New York, argued against a reduction of duty on iron ore.

Galusha A. Grow, of Pennsylvania, advocated a reduction of the duty on coal, but maintained that a proviso should be added to the law, declaring that the reduced duty should apply only to the products of such foreign countries as did not charge a higher duty on imports of American coal. He did not urge an abolition of tariff, but that it should be fixed at a rate which would cover the difference of wages in the United States and Canada.

Charles F. Mayer, president of the Consolidated Coal Company, of Maryland, read a paper protesting against any change in the existing rate of duty on coal. To reduce the rate, he held, would effect a reduction in wages, and would also destroy the coasting trade of the United States. He did not ask that the rate should be increased, although the just duty would be $1.25 a ton. He did not want to put the American laborer down on the same plane with the British laborer; a reduction of the rate of duty would have that effect.

Joseph P. Butler, of Ohio, protested against any reduction of the duty on pig-iron. He argued that under a protective tariff foreign iron had already been pushed out by our vast production, and if the duty was let alone the pig-iron makers would go on decreasing the cost of the iron to the consumers. Mr Butler believed in protecting everything produced in this country, but he assured the committee that the 27 little rolling-mills in New England did not amount to anything. They were not in the right locality. That industry was going West.

William S. Morris, of Pottstown, Pa., pleaded for the retention of the duties on iron ore and pig-iron. Without those duties he was sure it would have been in the past difficult to get all the ore and pig-iron we needed. Mr. Morris also asked for an increased and specific duty on steel plates. While on this topic he was led to complain bitterly because the great Bessemer Steel Association, Limited, had not permitted him to use patents belonging to them for making steel by the basic process from phosphorous ores.

Joseph Wharton, of Philadelphia, president of that association, listened to Mr. Morris, and then told the committee how the association had bought up all patents which seemed likely to interfere with their Bessemer process. There had been long litigation over some of the patents, and now it was necessary for the association to reorganize in order that they might grant to others the right to use their patents. When this reorganization had been effected Mr. Morris could get what he wanted provided he was willing to pay a reasonable royalty for the use of the patents. Mr Wharton's explanation lasted until dinner-time, and when he had finished the committee decided to be industrious and hold an evening session after the dinner recess.

At the evening session of the committee Oscar Reen, representing the Newark (N. J.) Smelting Works, endeavored to impress upon the committee the necessity of maintaining the present law in relation to the importation of lead ore when containing a valuable proportion of precious metals. L A. Holden, of Cleveland, Ohio, contended that lead ore, even when containing the ore of more precious metals,

should pay its share of the duty on imports. He was in favor of supplying the same protection to lead ore as was extended to iron ore and other articles. The principle of making lead ore an exception in the matter of protection was unjust, and would strike down one of the industries which were developing the great West. The interpretation put upon the law by the Secretary of the Treasury he believed to be unjustifiable. Hosea Townsend, of Colorado, protested against the finding of the Secretary of the Treasury as unfair to the mine-owners and miners of the West.

Mr. Bartine, of Nevada, said that the people of his region, irrespective of politics or of parties, were high-tariff men so far as lead was concerned; and he argued in support of the resolution recently offered by him in the House, requesting the Secretary of the Treasury to modify his lead-ore decision. The resolution offered by the speaker should be considered before any tariff bill was presented, because it was well-known that that bill gave rise to long-winded debates and might precipitate a deadlock upon the House. Mr. Bartine added that he had consulted with President Harrison on the subject, and that the President had fully sympathized with the people of the West, but did not feel at liberty to go behind the rulings of his predecessors.

W. F. Rockwell, of Connecticut, advocated the imposition of a mixed duty—specific and ad valorem—on pocket cutlery. Thomas W. Bradley, president of the New York Knife Company, argued in favor of an increased duty on the same article.

The first to be heard on Friday was C. S. Landers, of New Britain, Conn., on the subject of table cutlery. He was satisfied with the provision of the Senate bill, except in regard to one feature of the classification. The average duty on table cutlery imposed by the bill was 52 per cent., and the change in classification would increase the average to 56⅔ cents. The cutlery manufactures would have to be protected or they would die out, he said.

The anvil, "the oldest implement known to mankind," as it was characterized by Clark Fisher, of Trenton, N. J., was the next subject of discussion, and that gentleman presented the reasons why the duty should be increased. Of the anvils used in the United States about two-thirds are imported. He advocated an imposition of a duty of $2\frac{3}{16}$ cents a pound upon anvils, and said he believed that if that was done they could be sold cheaper to the consumer, as it would enable the manufacturers to increase their output. Forty years ago, when he first went into business, there were 25 anvil firms in the country. Now they have become extinct, with three exceptions. To lower the duty would have the effect of wiping out these three establishments.

William C. Cronemeyer, of Pittsburgh, Pa., described the unsuccessful efforts of American manufacturers to produce tin-plates at a profit. In 1872 the firm with which he was connected had started to manufacture tin-plates and for three years had been successful. At that time the price of ordinary tin-plate was $12 a box, but it had fallen to $4, and his firm had been obliged, in 1886, to go out of that line of business. Then the price had again gone up since the competition had been withdrawn. He produced before the committee samples of tin-plates, sheet-iron and taggers-iron, explained the difference between them, and stated in the course of his explanation that the more labor was put into sheet-iron and the finer the work upon it was the less protection it received.

In response to queries by Mr. Burrows, Mr. Cronemeyer said that to manufacture a box of tin-plate in this country cost about $5.50, while in England it could be produced at $2.25 less, the difference being attributable to the difference in the cost of labor. The present duty was not a protective one, but that proposed by the Senate bill, while not as high as it ought to be, had the merit of being protective. If the tin-plate industry could be built up in this country it would support a number of people nearly equal to the population of New York City.

William Metcalf, of Pittsburgh, interested in the production of crucible steel, impressed upon the committee the fact that since a tariff had been placed on steel and iron the cost to the consumer of articles manufactured of these materials had been reduced. He stated that he sold steel to Mr. Clark Fisher, the former witness, to be used in the manufacture of anvils, and that within 21 years the price of this steel has fallen from 30 to 50 per cent.

George T. Oliver, representing the manufacturers of wire-rods and wires, addressed the committee. He was well satisfied with the existing tariff on everything except wire-rods. On this material he advocated a specific duty of $\frac{6}{10}$ cent a pound on rods not smaller than No. 5 wire gauge and of 1 cent a pound on rods smaller than No. 5. Any reduction of duty on wire-rods would inevitably advance the price of barb-wire fencing and wire nails to the consumer.

A. W. Campbell, of West Virginia, a manufacturer of cut nails, thought that the manufacturers of soft steel should receive the same measure of protection as is accorded to the producers of steel rails, and he expressed himself as satisfied with the provisions of the Senate bill.

F. J. Slade, of Trenton, N. J., addressed the committee on the subject of structural iron. The price for iron beams to-day was $3\frac{1}{10}$ cents a pound. When he went into the business 20 years ago the price was about double that. In response to a question by Mr. Flower, Mr. Slade stated that there was a combination among the producers of structural iron, but he denied that the profits of the business were too large. They did not average more than 8 per cent. Unrestricted competition would lead to bankruptcy. Combination was advantageous to trade, and it was the duty of persons engaged in business to look after their own business. The manufacturers of beams simply said to one another: "Let us charge a fair price for our own goods." That was all the combination there was. No effort had been made to crush out the firms that did not belong to the combination and there was no understanding that the production should be limited.

General Imboden, of Virginia, speaking for his section of the country, favored the retention of the duty on coal and iron ore. In fact, he felt that it would be a wise policy to increase that duty. He described the growth of the coal, iron and railroad industry in Virginia, Tennessee and Kentucky, and contended that all this industry would be imperiled if coal were placed on the free list. Having stated that the coal from the Virginia coal-fields was sold in the West Indies and Central America, Mr. Imboden was asked by Mr. Carlisle whether if that were true the Virginia coal-producers could not compete in their own country with the Nova Scotia coal. Mr. Imboden responded in the negative and declared that an abolition of the duty would ruin the coal industry of Virginia. He then proceeded to argue in support of retaining the duty on iron ore. He represented not skilled labor, but unskilled labor. The men who worked the mines in the South were principally colored. These people had to be provided with work. If they did not receive work they would live on the whites dishonestly. A colored man would not steal if he could get work. Colored men were the best mine-workers. They were practical, industrious and faithful if they were paid promptly and treated kindly.

Judge Bowling, of Virginia, made an argument in favor of the retention of the duty on iron ore. He thought that this matter of protection to the industries of Virginia became one of the most important features in a determination of the race question. He had been born and reared among the colored people, and he counted them as his warmest friends. He spoke in no disparagement of the race. He could tell instances of trust in that race which would do honor to the head and heart of any man and should live in song and story. The colored people were in the South and the question was how to make better citizens of them. Farming did not pay in Virginia, and other labor must be supplied to the black man. When he had labor and received his wages for it, instead of remaining idle and thriftless, he got a little home and ceased to be a politician. Protection was a source of strength to the people of the South in endeavoring to make better citizens of the colored race.

Congressman Louis A. McComas, of Maryland, opposed any reduction of duty on bituminous coal, holding that such a reduction would not cheapen coal for the fireside, but would paralyze an important industry and lessen the price of its labor.

John P. Otterson, of Allegheny, advocated an increase of duty on enameled iron.

PERSONAL.

B. C. Mudge, who for some time was connected with the Bar Pumping Engine Company as the manager of their New England agencies, has now become connected with the firm of B. C. Mudge & Co., investment bankers, Boston, Mass.

C. Seymour Dutton, general agent and consulting engineer of William Tod & Co., of Youngstown, Ohio, has just returned from San Francisco, where he has successfully started a 700 horse-power Porter-Allen compound condensing engine for the California Electric Light Company.

C. S. Matthiessen, formerly of the Charleston Iron Works, Charleston, S. C., has established himself in the general machinery, railroad and mill supply business at Sumter, S. C.

Geo. H. Ismon has resigned the agency of the Cambria Iron Company and Gautier Steel Department, at Chicago, and connected himself with the Salem Wire Nail Company, for whom he will act as Eastern sales agent, with his headquarters in New York City. Mr. Ismon has an extensive business acquaintance throughout the West, who will hear of his transfer with regret. His successor will be Geo. L. Raymond, who has been connected with the Johnstown office of the Cambria Iron Company as traveling salesman in the home territory.

Paul Morton has resigned his position with the Chicago, Burlington and Quincy Railroad Company, and has become president of the Whitebreast Fuel Company.

H. M. Lane has resigned as constructing engineer of the Providence Cable Tramway, commencing January 1. He will manage the Lane & Bodley Company, of Cincinnati. Chas. A. Mixer is now chief engineer of the tramway to finish the road.

Andrew Carnegie has notified Cyrus Elder, of Johnstown, to draw on the firm of Carnegie Brothers & Co. for funds to restore the Cambria Library Association's building, at Johnstown.

Dr. R. W. Raymond with the new year severs his nominal connection as editor of the *Engineering and Mining Journal*, of this city, retaining however that of a special contributor. Hereafter his articles will appear over his own signature.

Washington News.

(*From Our Regular Correspondent.*)

WASHINGTON, D. C., December 30, 1889.

The tariff hearings which have been inaugurated under the auspices of the new Committee on Ways and Means have already developed an undercurrent of economic conservatism in the South which has been a great surprise to Representatives Carlisle, Mills, Breckenridge and McMillin. As the metal schedule has always been the one over which the opposing lines on protection and revenue reform have contended most bitterly, the chairman proposed to take up that subject first.

There has been considerable partisan motive in this pressing of the question in its present form at this time. The tariff consideration under the Mills *règime* in the House was a sort of star-chamber proceeding, in which no opinions were asked and none were sought. The leaders laid down an inflexible theory, based upon their own notions without reference to the practical interests of industry or trade. The campaign talk of a revenue tariff adjusted to the difference between the wages of American and foreign labor was proposed to pull the wool over the eyes of the people. The policy of the present committee is to allow the fullest latitude of opinion consistent with a strict application to the matter in hand and eliminating the discursive remarks which have heretofore cumbered tariff statements. The committee expect in addition to having the fullest information upon the tariff from the manufacterers' stand-point to place the leaders of the two political parties in their real attitudes on this question before the country.

This was the main significance of the hearings a few days ago on the metal schedule. Mr. Tobey, of Boston, took a stand for free raw materials and drew out a vigorous response from the iron-ore and pig-iron champions who were present.

But the event of the day was the speeches by General Imboden and Judge Bolling, of Virginia, and the Democratic editor of the Cleveland, Ohio, *Plain Dealer*. General Imboden created a sensation when pressed by his Democratic friends on the committee to explain his heretical economic utterances, judged from their standpoint, when he replied that but for the race question in the South Virginia and her sister States would come out boldly in support of protection. In these sentiments he was strongly indorsed by Judge Bolling and also by the editor of the *Plain Dealer*.

It was one of the most remarkable situations ever witnessed before the Committee on Ways and Means in all the long and often monotonous repetitions in the history of tariff inquiry. Mr. McMillin made several efforts to stop the too-free opinions of the distinguished Southern spokesmen, but they were not to be suppressed, and every time gave more than they received. The same free expressions were uttered by the representative of Smith M. Weed, the potential Democratic manager of the Lake Champlain region of New York and presiding spirit of its important mining interests.

It is proposed to continue these hearings in the same line. It is evident that there has been a great revolution in tariff sentiment among the Democratic leaders North and South, which may surprise the theorists of the Carlisle-Mills-Breckenridge-McMillin school before the present inquiry shall have been completed.

The chairman of Ways and Means expects to be able to report a tariff bill before the middle of February. The Republican members will be in constant conference with their friends in the Senate, so that a bill may be perfected which will receive the support of the Committee on Finance, and after an almost *pro forma* consideration have an early report and prompt action in the Senate.

Chicago Iron Trade in 1889.

At the close of 1888 a remark was made in connection with a review of the iron trade for that year that "a very careful survey of the situation discloses no domestic element of disturbance now threatening the prosperity of the country." The year then ending had been one of serious business disturbances, and the change to a condition of apparent tranquillity and therefore of recuperation was most welcome. A hopeful feeling was thus induced, however, which was somewhat stronger than the actual situation warranted, and as the new year advanced the downward tendency in prices continued. It was quite disheartening to even sanguine temperaments to find values steadily give way when the country generally was in a most prosperous condition; but they cheerily continued to predict an improvement. The spring and early summer of 1889 witnessed the very lowest prices for iron and steel of almost every description yet known in Chicago. For a time it was the lowest iron market in the North, and the local producers of pig-iron shut out all competing brands in their efforts to secure sufficient orders to cover their entire product. The steel-rail mills, which had shut down for their annual repairs in December, were slow to start up, owing to the slackness of work in that line, and with some of them the vacation lasted over four months. It was a most favorable opportunity for the consolidation of the three leading steel companies of the West, and the idea once broached was quickly adopted and speedily carried out, the Illinois Steel Company succeeding on the 1st of May to the North Chicago Rolling Mill Company, the Union Steel Company and the Joliet Steel Company. The consolidation of these important interests is destined to exert an important influence on the industrial future of the Northwest. The summer months brought with them a revival in the demand for steel rails which in time taxed the facilities of all the mills of the company to turn out the rails needed during the track-laying season by Western railroads. The improved condition of these roads, with their freedom from labor troubles and rate wars, and the increased traffic resulting from continued good crops, enabled them to purchase more freely such supplies as they needed, and not only the rail-mills, but car-shops and related industries also participated in the resulting benefits. Prices of iron and steel of all kinds advanced in the closing months of the year to something like their normal condition, but not to an inflated hight. Western manufacturers resisted as far as they could the influences which seemed to be working in favor of a "boom." The special feature of the advance was the movement in steel products and Bessemer pig-iron. Finished iron and foundry and mill pig-iron followed in their wake, but scored a much lower relative improvement. The year closed with bright prospects for the future on every hand and a general impression that the upward march of prices would be continued for at least a considerable part of 1890.

PIG-IRON.

Glancing backward over the year 1889 the interested observer cannot fail to be impressed by the fact that taking the year as a whole the transactions in pig-iron were as heavy in the Chicago market as in any preceding year, if not heavier. The downward tendency in prices continued until summer, and local pig-iron producers for the first time controlled the trade in coke pig-iron. They met the prices named by outside competitors, and at the same time turned their attention to special qualities in order to cover all branches of the trade. Reduced cost of ore, low freight rates on coke, modern furnace appliances and skillful practice enabled the local producers to accomplish the trying feat of holding their market without disastrous financial consequences. Their success in that respect, with prices down to an unprecedentedly low point, is an indication of what is to be expected in the future with the greater development of the industries of Chicago which is now in progress. Five new and very large blast-furnaces are now in course of erection in this vicinity and will all be in blast inside of the next 12 months.

The heavy demand for pig iron in the last half of the year, particularly for Bessemer pig-iron, caused an enhancement of values, which moved slowly but very steadily upward, and are at present writing likely to go still higher. The upward movement was characterized by no excitement, as buyers were not alarmed by an addition of but 50¢ or $1 at a time to former prices. Contracts for Bessemer pig-iron to be delivered this year have, however, been made to such an extent with furnaces which have always been identified with the foundry trade that it would not be surprising if a scarcity in foundry and mill irons should shortly develop. The course of prices of leading varieties of pig-iron during the year 1889 is shown in the following table of monthly averages, terms cash, f.o.b. Chicago:

Months.	Lake Superior coke No. 1.	Lake Superior charcoal.	Amer. Scotch (black-band) No. 1.	Southern coke No. 1.
January...	$16.75	$20.00	$19.25	$16.25
February..	16.00	19.50	18.50	16.25
March.....	16.00	19.50	18.00	16.25
April.....	16.00	19.25	18.25	16.00
May.....	16.00	18.75	18.00	16.00
June.....	15.50	18.50	18.00	15.50
July.....	15.75	18.50	17.50	16.50
August....	16.00	18.50	18.00	16.50
September	16.50	18.75	19.00	16.75
October....	18.00	19.50	20.00	17.25
November	18.50	20.00	20.25	18.00
December.	20.00	22.00	21.00	20.00

FINISHED IRON.

Bar-iron was probably the worst sufferer from the depression of 1889. It fell steadily from 1.70¢, half extras, f.o.b. Chicago, for mill lots of common iron, to 1.45¢ in the latter part of May, recovering quickly from that extreme point, but afterward advancing quite slowly until December, during which month it was practically stationary. During the year a new bar-mill was built by the National Forge and Iron Company, at East Chicago, introducing another competitor for Chicago business. Light sheet-iron held its own remarkably well, owing to the continued good demand from all branches of consumption. Some little interest was excited during the year by the advance in steel, which caused a number of mills to

resume the manufacture of iron sheets, for which they had been substituting steel sheets, much to the satisfaction of their customers. The course of prices during the year on mill lots of common bar-iron, angles and No. 27 sheet-iron is indicated in the following table of monthly averages, f.o.b. Chicago:

Months.	Common bars. Cents.	Angles. Cents.	No. 27 sheets. Cents.
January	1.70	2.15	3.05
February	1.67½	2.12½	3.05
March	1.62½	2.12½	3.00
April	1.60	2.12½	3.05
May	1.55	2.10	2.95
June	1.55	2.10	3.00
July	1 60	2.15	3.12
August	1.65	2.25	3.17
September	1.70	2.25	3.20
October	1.75	2.30	3.30
November	1.85	2.35	3.30
December	1.92½	2.40	3.30

STEEL RAILS.

The consolidation of the three steel-rail companies reduced the competition in this market and imparted a steadiness to prices which would hardly have been the case otherwise. A considerable portion of their product is also being diverted into other forms than rails, and this policy is to be extended still further. Among the important steel products turned out in large quantities last year were beams and wire-rods. This year a large plate-mill will be built by the same parties, which will still more diversify their product. Through their encouragement a steel ship-building plant is being established at South Chicago, which will consume large quantities of material that they can furnish. The course of the local steel-rail trade during the year is indicated in the following table of average monthly prices at Chicago:

Jan	$30.00	May	$29.50	Sept.	$32.50
Feb.	30.00	June	29.00	Oct.	34.00
March	30.00	July	29.50	Nov	35.00
April	30.00	Aug.	30.00	Dec.	37.00

The prospects for the steel-rail trade of the coming year are very encouraging, as orders have already been taken covering perhaps one-third of the capacity of the local mills.

OLD MATERIAL.

A very slack demand characterized the market for old material during the first half of the year and prices drooped lower and lower, but the improvement of the latter half had a marked affect, as seen in the following table of prices in the leading classes of old iron:

Months.	Iron rails.	No. 1 forge scrap.	No. 1 mill scrap.	Cast scrap.
January.	$21 50	$20.00	$14.00	$13.50
February	20.50	20.00	14.00	13.25
March	21.00	19.50	14.00	13.00
April	20.00	18.50	13.50	12.50
May	19.50	17.50	13.00	11.50
June	20.00	17.50	13.00	11.00
July	21.50	18.00	14.00	11.50
August	22.50	18.00	14.25	12.00
September	24.50	19.50	14.50	12.00
October	25.25	21.00	16.00	13.00
November	26.00	21.50	17.00	13.50
December	26.25	22.00	17.50	14.50

Old rails are quoted per gross ton and the other classes of iron per ton of 2000 pounds.

MERCHANT STEEL.

The very low price at which steel of all descriptions was sold during 1889 very greatly increased its use. Steel bars of some sizes were furnished by manufacturers at lower rates than they could supply bar-iron of fair quality. These conditions were changed in the last half of the year, when prices of steel began to advance, although the natural demand from usual channels of consumption kept the trade up to large proportions. The course of prices is indicated in the following table of monthly averages on mill lots, f.o.b. Chicago:

Months.	O. H. spring. Cents.	O. H. machinery. Cents.	Ordinary tool. Cents.
January	2.30	2.35	8.50
February	2.30	2.30	7.75
March	2.20	2.30	7.75
April	2.50	2.40	7.75
May	2.50	2 40	7.75
June	2.50	2.45	7.75
July	2.50	2.45	7.75
August	2.25	2.70	7.75
September	2.30	2.70	7.50
October	2.50	2.70	7.50
November	2.55	2.75	7.50
December	2.65	2.80	7.50

A peculiar feature of the steel trade latterly has been the tendency toward a common base price for machinery, spring and toe-calk steel. Leading manufacturers now make no distinction between them as to value.

NAILS.

At the close of 1888 the Western manufacturers of cut steel nails had about perfected the details of an organization which was expected to enable them to control prices This had the effect of keeping up values for a few months, but it hardly lasted through the first quarter of 1889. Prices then broke more seriously than quotations would indicate. The system was introduced of selling nails on a sliding scales of prices reckoned by the average above base which an order would carry. Out of this grew the practice, which has now become a rule of the trade, for manufacturers to quote as their base-price a rate at which they would take orders averaging 25 cents per keg above it. Although the nail trade was seriously demoralized by these practices during the summer, yet an improvement was perceived toward fall and prices slowly hardened, as our quotations will show. So unremunerative was the nail trade, however, that many manufacturers withdrew from it and the others refused to book as large orders from jobbers as had been their custom in former years. This was fortunate for them, as they thus realized the full benefit of each advance in price made toward the close of the year. A higher price on steel nails is expected to be named in January, when the Western manufacturers have another meeting. The wire nail manufacturers passed through a season of severe trial in 1889. Their price receded to a most unremunerative rate and some of the largest factories were closed. Trade was excellent in the last half of the year, however, and prices rose more rapidly than those of cut nails, with heavy orders crowding every factory in shape to run. For a brief time there was a dearth of wire nails in Chicago. In the midst of the improvement came the efforts of prominent manufacturers to organize the Federal Steel Company to control the output, but the scheme fell to the ground without apparently affecting the trade. The following table shows the course of prices of nails in large lots from factory, f.o.b. Chicago, in each month of the year under review:

Months.	Steel cut nails.	Wire nails.
January	$1.95	$2.55
February	2.00	2.40
March	1.95	2.35
April	1.95	2.35
May	1.90	2.30
June	1.85	2.30
July	1.85	2.30
August	1.85	2.25
September	2.00	2.35
October	2.40	2.55
November	2.40	3.15
December	2.52½	3.00

BARB-WIRE.

Manufacturers of barb-wire have reason to remember 1889. It was a year of very low prices and unremunerative business. Probably at no time since barb-wire fencing was first introduced were there so many machines idle as during the year which has just closed. Added to the depressing influences which were inseparable from the trade itself was the attempt to organize the Federal Steel Company. The projectors of this scheme kept prices down for some time after the great advance in the cost of wire-rods almost made a higher rate imperative. This was done for a two-fold purpose—1, to hasten the organization of the consolidation, and, 2, to prevent antagonism or prejudice against the project on the part of the public. When it was definitely abandoned the price of barb-wire advanced to something like its relative value; but it is still regarded as a ripe subject for a further advance, and 4¢ for painted before February 1 is a common prophecy in the trade. Manufacturers' prices for painted during the year have ranged about as follows:

	Cents.		Cents.		Cents.
January	2.80	May	2.65	September	2.75
February	2.75	June	2.65	October	3.05
March	2.70	July	2.65	November	3.15
April	2.70	August	2.65	December	2.25

Galvanized wire has maintained a uniform advance on painted of 60¢ ℔ 100 lb during the entire year.

THE METALS IN 1889.

COPPER.

The year opened strong enough on both sides of the Atlantic, with hardly a ripple on the surface. The annual statistics, however, gave food for reflection; thus it was shown that the French syndicate had during 1888 become the owners of 232,000 tons of copper at an aggregate cost of £16,349,500, of which they succeeded in realizing 87,000 tons, netting £6,512,500, so that at the close of 1888 they still held 145,000 tons, which, at £67. 16/10 per ton, represented the sum of £9,837,000. As it was probable that—without the support given it by the syndicate—copper would in the open market not command over £35 per ton, or about 50 per cent. of the last named amount, should the syndicate collapse all of a sudden, the figures given showed from a purely commercial point of view the precarious nature of the syndicate's position at the time. The total world's copper production in 1888 was shown to have been 259,391 tons, as compared with 223,595 tons in 1887 and 214,533 tons in 1886. It was proved, too, that in England and France taken together consumption had fallen off 17,478 tons. The lake copper production in 1888 was figured at 86,000,000 lb fine, against 75,471,800 in 1887 and 79,890,798 in 1886. One of the disadvantages the syndicate labored under was that they had to carry the stock usually held by the trade. It was, therefore, deemed advisable to strengthen their hands by some combination, and it was proposed to create a "metal bank," if possible, chiefly English, to get them out of the scrape. The Société hence proposed to assume 40,000 tons of copper, and the "metal bank" to be created was to carry 90,000 tons, together with all the contracts for the two years to come. The first intimation that there was something wrong was received on January 25, when Rio Tinto shares dropped 67 francs at Paris, because it leaked out that contracts bearing on the formation of an English company instead of a "metal bank" had fallen through.

Statistics reached us from Spain showing that there were shipped in 1888 825,045 tons of pyrites, against 766,801 in 1887 and 671,897 in 1886, and of precipitate 29,105 tons, against 29,890 and 27,003 tons respectively. London opened the year at £77. 5/, Chili bars improved to £78. 10/, subsequently declining to £73, in order to wind up at £77. 10/, while we here opened at 17.25¢, advancing to 17.50¢, and closed at 16.75¢, after touching 16.50¢. The United States exported in 1888 31,664,046 lb of ingot-copper, against 12,347,507 in 1887.

Rumors with reference to the syndicate's endeavors to strengthen their position thickened during February. Negotiations were opened with our lake companies for modifications in the subsisting contracts on the basis of 15 per cent. curtailment of production. Furthermore it was stated that the syndicate intended reducing prices in London so as to stimulate thereby a more liberal consumption. On February 24 it was reported that the formation of a Compagnie Auxiliaire des Métaux had finally taken place, that the founders assumed all the shares and that 25 per cent. of the capital subscribed for, of 40,000,000 francs, had been paid in. The company were to issue 80,000,000 francs bonds, so as to constitute a total capital of 120,000,000 francs. But the Société des Métaux, in order to be sure that the corner could be carried to a safe issue, insisted that the syndicate should authorize an additional issue of 100,000,000 francs in so-called warrant bonds, to be placed on the market at some future suitable moment. The grand total of 220,000,000 francs would enable the parties interested to pay for 110,000 tons of copper and store it away. The formation of an English auxiliary company having failed, the whole thing as it stood was more calculated to spread suspicion than confidence. Hence some prominent names were pushed forward; Messrs. Hentsch, Masson and Quiedeville were appointed managers and Messrs. Denfert-Rochereau and Secrétan auditors. About the middle of the month it was stated that the Anaconda Mine was to receive $300,000 monthly from the syndicate to keep idle during the year. Shares of the Société des Métaux closed the month at 547 francs. Opening at £77. 10/, London gradually improved to £79. 15/ in order to close at £78, while in our own market the opening figure was 17¢, followed by a decline to 16.40¢ and a recovery to 16.50¢ after touching 16.60¢.

The signal for the collapse of the Société des Métaux was given on March 6, when M. Donfert-Rochereau, of the Comptoir d'Escompte, committed suicide. The fact is, that while Mr. Secrétan had started the original plan of speculating on a vast scale in copper while extricating the Société des Métaux from tin, he succeeded in getting the Comptoir d'Escompte, managed by M. Denfert-Rochereau, to be his principal backer. The levity with which the latter staked the capital of the shareholders of the Comptoir d'Escompte, while unscrupulously violating their by-laws, had been amazing indeed. On presenting the balance-sheet of the Comptoir on January 1 M. Denfert-Rochereau and his co-directors left the shareholders in complete ignorance of the precarious character and position of the Société des Métaux. Their paper was figured in full, so that a dividend could be declared. Upon the assurances of Secrétan, his abettors, Denfert-Rochereau and allies, were in hopes that some plan might be hit upon to bridge over matters; still the Comptoir d'Escompte, by indorsing the Secrétan contracts to an unlimited amount, had been drawn in to such a depth that it was but due to the shareholders that they should have been informed of it at their last meeting, even at the risk of precipitating a crisis. Not having the moral courage to face the reproaches of the shareholders and the pecuniary responsibilities involved, M. Denfert-Rochereau preferred death. The effect was most disastrous to all who were caught holding Comptoir d'Escompte, Société des Métaux and copper mining shares, whether the companies were located in America or elsewhere, except such as had solid London bankers' guarantees, like for example those extended by the Barings. The panic which ensued in Paris was all the greater since the Comptoir d'Escompte was next to the Bank of France deemed the safest banking institution in the republic, so much so that the Government had put the Comptoir in charge of its financial dealings with the East, which are quite considerable in Cochin-China, Tonquin and Pondicherry. Furthermore, it was a well-known fact that the French Government and Chambers would not allow the Bank of France to come to the assistance of the Comptoir d'Escompte any further than they could do in perfect safety, indeed no further than they went in the case of the exploded Panama Canal Company, although in the latter's failure the fortunes and savings of the people at large were wrecked, while the losses entailed by the criminally bad management of the Comptoir d'Escompte and Société des Métaux directors were sustained by big and small financiers on the Paris Bourse and speculators outside of it, with whom little of no sympathy was felt. It was the caving in of a house of cards with no bottom to it, except copper that was only worth half of its face value. What followed was a series of fruitless negotiations without end between Europe and America. Their aim was to patch up some new sort of undertaking to keep under control the large amounts of copper left on bankers' hands, establish a minimum price at which it was to be doled out, keep a bridle on American producers if possible and a check on copper production. The efforts were made in spite of the severe lesson just received that the laws of commerce cannot be violated by monopolizing capitalists and producers with impunity beyond a comparatively moderate length of time, however powerful they may be. These sickly attempts to prolong the agony did not fail to fill with contempt and disgust all impartial, disinterested lookers-on, convinced as these were that the only safe and radical remedy would be found in leaving the article to shape its course without artificial interference through the unfailing operations of the natural laws of demand and supply; to let the metal drop to the figure the world's market could afford and thereby give a fresh impulse to consumption and a quietus to substitutes that had been found for dear copper. We shall spare our readers a painful recapitulation of the frantic attempts made to bolster up the article, of the trips made to Europe during the summer by American copper magnates and the ridiculous "fiasco" which attended each of them. And so it came that the metal left to itself in the end proved to possess greater individual buoyancy than it was given credit for. At prices around 11¢ consumption came forward freely and at a ratio beyond expectation. Copper underwent in the same year precisely the same experience which an even more important article, sugar, passed through, with this difference—that the rebound of the former came a good deal sooner. Much of this rapid rebound is believed to be due to the increased consumption for electrical purposes. Société des Métaux shares fell on March 6 to 188, and when the panic abated closed at 192; Rio Tinto touched 382 and closed at 397; Comptoir d'Escompte ranged between 800 and 860, the final quotation being 810. Copper opened the month of March in London at £74. 10/, had declined to £38 on the 18th and closed the month at £39. 10/, a decline of 47 per cent. In New York the opening figure was 16.25¢; on March 18th it had dropped as low as 13.25, and wound up the month at 14.75¢, a decline of 9 per cent. The price was better sustained on this side, because the lake companies still entertained strong hopes that an arrangement with the parties in Europe would be effected; meanwhile they were the only holders of available copper, the lots held here by the syndicate people and bankers being tied up for the time being by the events in Europe. Parties interested in Copper in England were, besides, more skeptical about an arrangement than their colleagues in France, a fact soon discovered by M. Moreau, the liquidator of the Comptoir d'Escompte.

This officer proceeded to London in April. On his arrival there he found that the American representatives desired to fix the price of copper at from £40 to £45, while the Rio Tinto people wanted it to be £35, and the bankers desired as much as £50. A stormy discussion took place in London on April 17 between the representatives of the copper mines resident in London and a banking firm of high standing. The Bank of France, Crédit Foncier and Baron Hirsch were understood to hold jointly 40,000 tons, the Banque de Paris, 20,000, and other firms 50,000. It was recommended that this accumulation of 110,000 tons be held for six months, and the output curtailed. On April 19 the shareholders of the Comptoir d'Escompte filed the necessary number of shares to enable them to agree on a resolution legal in its effects at a general meeting to come off April 29. While this was pending M. Moreau made an effort in London to get the Comptoir d'Escompte released from guarantees given the English and American mines in support of the collapsed Société des Métaux, basing his arguments on the precedent of the "Terrenoir iron case." He found that the warrantees were not in a hurry to accede to anything of the kind; on the contrary, parties interested in England subscribed a couple of thousand pounds sterling to pursue the Comptoir d'Escompte directors and those of the sydicate personally. Five of the dividend-paying lake companies made their annual statements at this time, the Quincy, Atlantic, Central, Osceola and Franklin. Their aggregate surplus was $1,254,852, being $33,512 less than the previous year. They earned nearly 100 per cent. more on their respective stocks, and were enabled to pay 135 per cent. more in 1888 than in 1887. The average price obtained for their copper in 1888 was 15.2¢ ℔ lb, against 11.9¢ in 1887. The London opening price in April was £39. 5/; after recovering to £41. 10/, there was a drop to £36. 17/6, and a recovery at the close to £38. 5/. The New York market fluctuated but little. Commencing April with 14.50¢, there was an improvement to 15¢, a subsequent decline to 13.50¢, and a final winding up at 14.25¢. The March panic in Paris subsided all the faster as the Bank of France in an amicable way and without incurring any responsibilities facilitated the financial operations of the Comptoir d'Escompte. The aim was to reorganize it on a new basis so as to enable the bank to resume on May 1 with reconstituted means. Its pending suits against its predecessor were safe in the excellent, impartial Parisian courts of justice. This simplified matters greatly, and besides the holders of hypothecated copper, for the most part financially powerful banking concerns, were for special and general reasons interested in a revival of confidence. There were, moreover, other matters engaging the attention of Parisians.

rich or poor. There was the political suicide of the man on horse-back, the would-be Fonseca of the French republic, dispelling a laughable phantom, and there was the Universal Exposition about to throw open its doors to millions of visitors. If Panama and Secrétan had emptied the pockets of many Frenchmen, rich or poor, there was a flood of gold approaching which was to be added to French, Parisian wealth in particular, and all were bent on making the exhibition an unprecedented success, which it proved to be. Copper and its attending dilemmas were thus soon lost sight of, the old Comptoir d'Escompte's receivers made a statement showing that by prudent realizations their assets would probably yield a surplus of 6,000,000 francs, and the new bank of the same name was thus started on a clean basis, feeling assured, moreover, of the valuable Government patronage returning to it after it should be fairly under way under an entirely remodeled management.

The American delegates of mining companies having returned from Europe in May without arriving at any definitive, binding arrangement with holders of copper, the greater part of the month was taken up with meetings on this side to concert a common course as to what our consumers would have to pay for their requirements, and 12¢ was the preliminary price fixed upon for lake. It was thought that this figure was low enough to induce consumers to anticipate requirements, besides freely attending to current wants. But in this they were mistaken. Consumers, judging from the generally disorganized position of copper between Europe and America, were determined not to show the least alacrity in re-entering the market to the extent producers had counted upon. They continued to buy from hand to mouth in hopes that after a while the domestic market would sag off to a lower level, the more so as it was no secret that there were dissensions among the companies, threatening a split at any moment. Besides, there was still the undisposed bankers' stock of lake copper. The holders and lake, &c., companies were unable to come to an agreement as to what would be the best policy with respect to this copper. The incoherent weakness thus attending the position of the metal here was, it may be asserted, the salvation of it, inasmuch as it paved the way for a further decline, encouraging consumers later on not only to attend freely to current wants, but in a quiet way secure as much ahead as could be conveniently procured. London opened May at £38 in order to gradually improve to £41. 15/ and close at £40. 17/6, while we here began the month at 14.25¢, declined by degrees to 12¢, and finished the month at 12.25¢. The Boston and Montana Mine made the largest product in its history in May, getting out 2,520,100 lb of fine copper and 33,000 ounces of silver, the total product during the first 11 months of the fiscal year being 21,630,553 lb of copper and 116,782 ounces of silver, against 7,000,000 lb of copper and no silver during the corresponding period of the previous year. Early in June the official liquidator of the Comptoir d'Escompte again visited London, but his interviews with representatives of the mining companies did not lead to any satisfactory result, some of them declining to be parties to any fresh combination to advance prices and reduce production. Perceiving that there were no means to procure lake copper below 12¢, our consumers at length resolved to subscribe to it not only to the extent of their immediate requirements, but even to somewhat anticipate them, and in this manner the otherwise dull midsummer season was to a certain degree enlivened. June opened in London at £40. 17/6 and advanced to £42, receding toward the close to £41. 12/6. We ourselves began the month at 12.10¢, declined to 11.90¢, recovered to 12.10¢ and finished the month at 11.60¢. In June English representatives of larger producers had made renewed attempts at Paris to conclude an arrangement with the French holders of the stock, then about 100,000 tons above the normal quantity. They failed. The takings among us were but moderate, in view of the unsettled feeling prevailing on all hands.

July opened in London at £41, advanced to £41.15/, receded to £40.15/, and after touching £42 once more, closed at £41.15/, while in New York the opening figure was 11.75¢, with a subsequent recovery to 11.85¢, followed by a momentary advance to 12¢ and a winding up quotation of 11.75¢.

In August the encouraging intelligence reached us from Europe that while the arrivals of Copper were large from pretty much all quarters except Chili, the deliveries to consumption were equally so since copper had been left to take care of itself. The identical features characterized the American market. While this was the case, the presence of a leading representative of American producers in London and Paris led to reports of fresh negotiations with the liquidator of the Comptoir d'Escompte and the present holders of large stock for a limitation of production, so that the stock might be gradually reduced without detriment to the value of copper.

The export of ingot-copper from the United States during the fiscal year ended June 30 was shown to have been 14,334,040 lb, against 25,303,337 the previous year August was ushered in in London with the quotation of £42, to advance to £43. 12/6, recede to £42. 5/ and end the month at £43. 7/6 Opening at 11.75¢, we advanced to 12.10¢, and closed at 12¢.

In September the report given to the European markets by the holders of the stock taken over from the Société des Métaux enabled the different mining companies over there to realize their products at full prices, chiefly for forward delivery. On this side the final collapse of the combination at length restored the metal to the legitimate influences of the demand and supply, and, while unsettling values for the moment, created a drooping tendency all the more pronounced, as consumers were seemingly determined to hand back as much as possible, while the one or the other large producer or holder evinced an inclination to accept low figures on the spot and for forward delivery. The demoralization thus prevalent caused an unsettling of values to such a degree that at one time it looked as though bottom would only be reached at 10¢ for lake. At any rate the American market, accustomed to be ruled by the domineering mining companies, had for the moment lost all stamina, while in Europe, on the contrary, the steadiness of large deliveries to actual consumers imparted stability and firmness to ruling rates. Thus London opened September at £43. 5/, to recede to £42. 10/, rebound to £43, and close the month at £42. 17/6, while we here inaugurated the month with 11¢, dropped to 10.50¢ and finished it at 10.85¢.

In October it was instinctively felt by all users of copper that in view of the revival in the demand on all hands the price of 11¢ for lake was a pretty safe basis to operate on and lay in a supply, even at the risk of its possibly dropping to 10¢ before the year came to a close; hence the purchasing going on on the spot and to arrive of lake and casting brands was unusually lively the entire month, so much so that it was certain there would soon be a positive scarcity of copper among us outside of that held by bankers. In other words, the metal had now reached a very sound basis on this side, notwithstanding the continued large current output. In Europe consumption had made such headway that on October 1 the visible supply in England and France had steadily decreased from 124,853 tons on April 1 to 106,033 tons. The fact is that the abnormal demand to supply the wants of consumers all over the world, who had reduced their purchases to the smallest possible limit during the prevalence of high prices due to the operation of the French syndicate over a period of 16 months, appeared at length to be satisfied. Although the consumption due to the revival in trade in Europe and the increased use of electricity was still very large in October, the supply then on hand seemed quite equal to it. The Commercial tribunal of the Department of the Seine gave judgment at the time in the suit brought by the official liquidators of the Comptoir d'Escompte against the former administrators and censors of the society, declaring the guarantee given by the directors of the Comptoir to be a violation of the statutes, and condemning those administrators who were also directors of the Société des Métaux and privy to the details of the speculation to the payment jointly and separately of a provisional sum of 12,000,000 francs, the other administrators to 6,000,000 francs and the censors to 1,000,000 francs—together 19,000,000 francs, or $3,800,000 American gold. October opened in London at £42. 15/, improved to £47, receded to £45. 5/ and finished the month at £47. 15/. Here the opening figure was 10.70¢, with a subsequent rise to 10.90¢ and a closing quotation of 11.50¢.

In November matters took a decidedly more favorable turn both in Europe and America. The strength of the market in England was due to the large and active consumptive demand both from Birmingham and India, smelters also being somewhat bare of stocks. It was also stated that the use of the new smokeless powder by the German Government would increase the consumption of copper required for the necessary cartridge-cases. About the stock of copper held on the other side one of the Birmingham trade papers expressed itself at the time as follows: "The present operations of the copper ring excite a good deal of interest. The figures we have been able to procure from London and Paris through our correspondents there throw some light on them. The ring has assumed from the Société des Métaux a little less than 130,000 tons, and is resolved, it seems, not to let the price drop below £50. In order to succeed in this purpose they intend marketing the stock very slowly, and if in spite of all the precautions taken the price should decline, all sales shall not only be stopped, but they will buy back. The ring is, however, convinced that the price can be sustained without having to adopt vigorous measures."

The production of the Lake Superior mines for the first ten months was 76,630,000 lb fine, against 74,222,000 in 1888. The buoyancy in the iron and steel markets on both sides of the Atlantic also contributed to start a speculative inquiry for copper in Europe, while here the large purchases of copper made when it was low created a positive scarcity of available metal. The result was that London opened November at £47. 15/, advanced to £50. 2/6, and closed the month at £49 17/6, while New York began at 12¢, rose to 14.15¢ and, after receding to 13.90¢, wound up at 14¢.

December produced no novel features not foreshadowed by the developments on both sides of the Atlantic during the previous two months, London hovering around £50, and New York remaining fairly active at 14¼¢ @ 14½¢.

TRADE REPORT.

Pittsburgh.

Office of *The Iron Age*, Hamilton Building, PITTSBURGH, December 30, 1889.

The outlook for the new year is very encouraging. It is customary with many of our manufacturers to take stock and make improvements and repairs during the first week or two of January, but many of them are so full of orders that they will not take as much time as usual for this purpose. Complaint is still made that prices for Finished Iron and Steel continue low relatively, as compared with cost of raw material, but this in time will adjust itself in a regular way.

Pig-Iron.—Considering that the end of the year is close at hand there has been a very fair business the past week, and while the market has ruled comparatively quiet prices are firm. As compared with the lowest point this year, prices on Mill Irons have advanced from $4.50 to $5 ℔ ton, and furnace men look for still higher prices early in the new year. Bessemer has advanced as compared with the lowest point $8.50 @ $9 ℔ ton, or nearly twice as much as Mill Iron. The reason of this is that there was a much larger demand for the former than the latter, and this is still the case, which demonstrates very plainly that Steel for many uses is supplanting Iron. Brokers report that it is somewhat difficult to find a furnace that is in a condition to take an order for immediate or near-by delivery. This accounts also for the fact that there is much more difference than formerly between the price of Bessemer and Mill Irons. A year ago the difference was only from $2 to $2.50 ℔ ton; now it is from $5.50 to $6. The probability is that some of the furnaces now running on Forge Irons will go on to Bessemer, but this will require time. Many of them have contracts for Forge Iron, which, of course, they will have to work off. There will be an increased production of Bessemer Pig within the next month or two, and it will be required in order to supply the demand, which appears to be increasing at all consuming points. The market at the present time is firm for all kinds of Iron, but Bessemer is the strongest. We quote prices as follows:

Neutral Gray Forge	$18.00	@ $19.00,	cash
All Ore Mill	19.50	@ 20.50,	"
White and Mottled	17.00	@ 17.50,	"
No. 1 Foundry	19.50	@ 20.00,	"
No. 2 Foundry	18.50	@ 19.00,	"
No. 1 Charcoal Foundry	23.50	@ 24.00,	"
No. 2 Charcoal Foundry	22.00	@ 22.50,	"
Cold Blast Charcoal	25.00	@ 28.00,	"
Bessemer Iron	24.25	@ 24.75,	"

In regard to Bessemer there were no sales reported this week; city furnaces have none to sell, while valley furnace men are asking $23.75 @ $24, cash, at furnace there, which would be equal to $24.55 @ $24.80, delivered, the freight being 80¢ ℔ ton.

Muck Bar.—There has been little or nothing done for the past week; so far as can be learned there have been no sales as yet for January delivery above $31.50, cash, but some sellers are now asking $32, cash, and refusing to accept anything less. It is claimed that taking the present cost of Pig-Iron into consideration Muck Bar should be worth from $32 to $32.50, cash, according to quality and delivery.

Manganese.—Sales of 80 per cent. Ferromanganese reported at $105, cash, at seaboard, for January delivery, March and April delivery being offered considerably below the price quoted. The demand at present appears to be for small lots for immediate delivery. It is expected that Carnegie, Phipps & Co. will be sellers of domestic Ferro before long. They have had none to sell for several months past, owing to difficulty in getting ores.

Manufactured Iron.—For this particular time, just at the close of the year, business is remarkably active, which may be attributed in large part to an apprehension on the part of buyers that prices will go higher, and they are anxious to get their orders placed as soon as possible. Bars are still quoted at 1.90¢ @ 2¢; Plates, 2.40¢ @ 2.50¢; No. 24 Sheet, 3¢ @ 3.10¢; Skelp Iron, 1.85¢ @ 1.90¢ for Grooved and 2.15¢ @ 2.25¢ for Sheared, all 60 days, 2 % off for cash. Structural Iron: Angles, 2.45¢; Tees, 2.95¢; Beams and Channels, 3.10¢; Sheared Bridge-Plates, Steel, 2.85¢. Universal Mill Plates, Iron, 2.55¢.

Nails.—The Nail market is quiet for the present, but an improved business is looked for next month. No change in the price of Cut Nails, but an advance is looked for early in January, and it is doubtful whether an order could be placed for future delivery at present prices, as manufacturers are very confident of an advance within the next week or two. We continue to quote at $2.35, 60 days, 2 % off for cash. Wire Nails remain as last quoted at $2.85 @ $2.90 in car-lots and $3 for less than a carload.

Wrought-Iron Pipe.—The demand for Pipe continues remarkably good for this season of the year. Mills are all busy and prices are firm at the association rates. Discount on Black Butt-Weld Pipe 50 %; on Galvanized do., 42½ %; on Black Lap-Weld, 62½ %; on Galvanized do., 50 %; Boiler-Tubes, 1¼-inch and smaller, 50 %; on 2-inch and larger, 55 %; Casing, 5½-inch, 55 % off.

Old Rails.—The market appears to be stiffer for Old Iron Rails, with sales at $28 @ $29; a lot of 1000 tons reported at $29, which is $1 ℔ ton higher than any other sales yet reported. Old Steel Rails, for which there has been quite a demand lately, may be quoted at $23.50 @ $24, with a sale of 500 tons reported.

Billets and Blooms.—Bessemer-Steel Billets and Blooms continue in demand and prices, especially for immediate or near-by delivery, are still tending upward; sales reported at $36.50 @ $37, cash. Nail Slabs are quoted at $36 on cars at Wheeling.

Steel Rails—Are still quoted for near-by delivery at $35 @ $36, cash, at mill, but it is rumored that some large orders have been taken here for spring delivery at about $34.50. There appears to be considerable competition between Pittsburgh and Chicago on Western business.

Steel Plates.—There is a fair business reported at full prices: Fire-Box, 4¢ @ 4½¢; Flange, 3½¢; Shell, 3¢ @ 3.10¢; Tank, 2.75 @ 2.80¢.

Merchant Steel.—There is a very good demand, and prices are firm as quoted. Tool Steel, 8¢ and upward; Crucible Spring Steel, 4¢; Crucible Machinery Steel, 5¢; Open-Hearth Steel, 2½¢ @ 3¢; Bessemer Machinery Steel, 2½¢; Tire Steel, 2¾¢ rates

Wire-Rods—Are still quoted at $52 ℔ ton, with an increasing demand.

Railway-Track Supplies.—The demand is only fair, but is expected to improve next month. No change in prices. Spikes, 2.15¢, 30 days here, and 2.25¢ at Chicago and St. Louis. Splice-Bars, 2.10¢ @ 2.20¢; Track-Bolts, 3.10¢ with Square and 3.20¢ with Hexagon Nuts.

Old Material.—There is a continued good demand and prices are well maintained. Sales No. 1 Wrought (Railroad Shop) Scrap, $22.50 @ $23, net ton; Old Car-Axles, $29 @ $30; Cast Scrap, $16, gross ton; Old Car-Wheels, $20.50; Bloom and Crop-Ends, $24 @ $25; Crucible Steel, $30.

The partnership heretofore existing between F. N. Hoffstot and W. N. Taylor under the firm name of Hoffstot & Co., in the Iron commission business, at 112 Water street, Pittsburgh, was dissolved by limitation on the 31st ult. Mr. Hoffstot will continue the business of the old firm under the same title and at the old location. Mr. Taylor will continue in the same business, with headquarters in Room 817, Lewis Block, Pittsburgh.

Louisville.

LOUISVILLE, KY., December 30, 1889.

Pig-Iron.—There have been no sales of any amount here during the past week and offerings have been below prices that recently were current, a sale by one of the most prominent furnaces South at $16.50, Louisville, for close Silver Gray being among the number. Parties buying elsewhere have made concessions. Consumers here are well supplied with Iron and are not willing to pay the additional freight that will go into effect January 4. It is thought the present reaction is but temporary and will be a benefit to the furnaces in calling a halt on the upward tendency of prices for a short time, as it is thought the market will undoubtedly advance much further later on and continue for a longer period than if prices had gone forward rapidly. Current quotations are as follows:

Southern Coke, No. 1 Foundry (new classification)	$18.25 @	$18.75
Southern Coke, No. 2 Foundry (new classification)	17.75 @	18.25
Southern Coke, No. 3 Foundry (new classification)	17.25 @	17.75
Gray Forge	16.75 @	17.25
White and Mottled, different grades	15.50 @	16.50
Silver Gray, different grades	16.25 @	17.25
Southern Charcoal, No. 1 Foundry	18.50 @	19.50
Southern Charcoal, No. 1 Mill	17.00 @	17.50
Southern Car-Wheel, standard brands	23.50 @	24.50
Southern Car-Wheel, other brands	19.25 @	21.75
Hanging Rock Coke, No. 1 Foundry	18.50 @	19.00
Hanging Rock Charcoal, No. 1 Foundry	22.00 @	22.50
Hanging Rock, Cold Blast	24.00 @	26.00

Cleveland.

CLEVELAND, December 30, 1889.

Iron Ore.—Probably from 4,750,000 to 5,250,000 tons of Bessemer Ore have already been sold. In the closing hours of this unprecedented rush for Ore many months in advance of its delivery prices have been slightly advanced. The announcement is made that many of the mines have disposed of their entire output for 1890. The market has practically closed until after the holidays, but there is every probability of active dealings in non-Bessemers early in January. Scattering sales of Ore of this grade have already occurred, the prices obtained being fully proportionate with the quotations for Bessemer Ore. The advance in the price of Republic Ore from $6.50 to $7 and in other Bessemers of from 25¢ to 50¢ ℔ ton was only made after enormous quantities had been sold, and was intended to check the demand until the mine-owners have had an opportunity to examine their property and make estimates of the probable output for 1890. It is not true, as has been so freely reported, that the Bessemer companies have sold all the Ore they expect to produce. There are orders in the desks of the local dealers for fully 1,000,000 tons of the best Bessemer Ores, with a probability of large sales within a very few weeks. Nearly all the vessels on the lakes have been chartered to bring down the immense quantities of Ore to be delivered at Lake Erie ports next season.

Pig-Iron.—Although the remarkable activity of the market has been slightly interrupted by the advent of the holidays, prices are still advancing, and the whole tone of the Pig-Iron trade is very firm. Sales of Bessemer and Mill Irons in very substantial quantities have, however, occurred between the two holidays. Bessemer Iron now commands $25 @ $25.50 at the furnace. Mill Iron is bringing $18 @ $18.50 at the Valley furnaces. Foundry Iron is quoted at $19.50, and a heavy buying movement is looked for early in January. Lake Superior Charcoals continue to improve in favor, and a square advance to $23 is reported.

Scrap-Iron.—Old American Rails now bring $28 @ $28.50. The market is not active, but prices are very firm.

Manufactured Iron.—Common Bar is now quoted at 1.85¢ at the mills, with a demand considerably in advance of the supply.

Chattanooga.

Office of *The Iron Age*, Carter and 9th Sts., CHATTANOOGA, December 30, 1889.

Pig-Iron.—Under the influences that exist at the closing-up of the year, and the uncertainty there must necessarily be in regard to prices for the future year, the market is a little unsettled, and close quotations are not exactly in order. The furnaces, however, are selling quite freely for future delivery up to the middle of the coming year. With a few exceptions there appears to be no falling-off in demand, the majority of which is coming direct from actual consumers, which is considered a very healthy condition of things. So far as can be ascertained a basis of $16 for No. 1 Foundry appears to be the prevailing price, although there seems to be quite a diversity of opinion on the part both of consumer and producer as to what the new year will settle down upon. There appears to be no want of knowledge or comprehension that there will be a large increase in the output during the coming year, which will be augmented very much toward the close of the year. All the furnace companies in this district are making no other calculation than that their works will be crowded with orders during the entire coming year from consumers who, so far as prudence dictates, are fortifying themselves by large purchases. The Southern foundries also are buying in larger lots than usual, some of them as much as six months ahead. General business throughout the South is in a very healthy condition. The only complaint which appears now to prevail is the tightness of the money market. The lines leading North have issued a new rate-sheet on Pig-Iron to Northern points on a basis of $2.95 to Louisville and Cincinnati and $3.70 to St. Louis, to take effect January 6, 1890.

Detroit.

WILLIAM F. JARVIS & Co., under date of December 30, 1889, says: The week under review has shown an active buying and prices have advanced all along the line. Lake Superior Charcoal has advanced 50¢, and almost every mail brings inquiries for quantities ranging from carloads to 1000 tons. A number of sales have been made at the advanced prices. The same wide difference in prices of Foundry Iron reported last week still exists. A few brands are being offered at $20 @ $21, while others are held firm at $23.50. It is confidently expected by the majority of both buyers and sellers that the 1st of January will show a still further advance of from 50¢ to $1 ℔ ton. There has been but very little trading recently in Old Car-Wheels, as the views of buyers and sellers are very far apart. With a strong, active market we quote as follows:

Lake Superior Charcoal, all numbers	$22.00 @ $22.50
Lake Superior Coke Bessemer	25.00 @ 25.50
Lake Superior Coke Foundry, all ore	21.00 @ 22.50
Lake Superior Coke, cinder mixed	19.75 @ 20.75
Standard Ohio Blackband	20.50 @ 22.00
Southern No. 1	20.00 @ 21.00
Southern Gray Forge	18.00 @ 18.50
Southern Silvery	17.50 @ 18.50
Jackson County (Ohio) Silvery	19.50 @ 20.00
Old Car-Wheels	12.25 @ 20.75

St. Louis.

OFFICE OF *The Iron Age*, 214 N. Sixth st., ST. LOUIS, December 30, 1889.

Pig-Iron.—The demand has fallen off somewhat during the week under review, but there are no indications of any weakness in the situation. Consumers are unwilling to enter the market now, but are waiting for an opportunity of placing their orders at lower prices than are now prevailing. Furnaces have a few odd lots to offer for prompt delivery, and for these are asking full prices. Several lots of iron which were in the hands of speculators have been sold during the week at a trifle less than current quotations, but the market as a whole is in excellent condition, and any decided increase in the demand will most likely be followed by higher prices. Reports from the furnaces are of a bullish character and their advice to the agents is to "hold up firm and make no concessions whatever." Lake Superior Charcoal Irons are in urgent demand; and $24.25, f.o.b. St. Louis, is quoted as bottom, at which figure several hundred tons were taken a few days since. The advance in freight rates of 40¢ ℔ ton from Southern furnaces, which takes effect January 4, and the possibility of an advance in Coke early in the same month, are essential reasons for furnace men asking full prices. For ordinary sized lots we quote as follows for cash, f.o.b. St. Louis:

Southern Coke, No. 1 Foundry,	$19.00 @ $19.50
Southern Coke, No. 2 Foundry,	18.50 @ 19.00
Southern Coke, No. 3 Foundry,	18.00 @ 18.50
Gray Forge	17.50 @ 18.00
Ohio Softeners	20.00 @ 20.50
Lake Superior Charcoal	24.00 @ 24.50
Missouri.	
Charcoal Foundry, No. 1	20.50 @ 21.50
Charcoal Foundry, No. 2	19.00 @ 20.00
Tennessee.	
Charcoal Foundry, No. 1	19.25 @ 19.75
Charcoal Foundry, No. 2	18.50 @ 19.00

Connellsville Coke, f.o.b. East St. Louis, $5.25; St. Louis, $5.40.

Bar-Iron.—It is quite probable that shortly after January 1 price will be advanced, as mills have about all they can handle, and indications point to a largely-increased demand in the course of the next few weeks. Lots from mill command 2¢ and small lots from store are quoted at 2.15¢.

Barb-Wire.—The month of December just closing has been an active one for the manufacturers of Barb-Wire. This period of the year is usually marked by extreme quietness, and mills generally depend on this dullness to enable them to stock up in preparation for the spring trade, which is usually heavy; but this year the conditions have entirely changed, and January 1 will find but little available stock on hand, and, as indications point to an unusually large trade during the month of January, it seems more than probable that the mills with but light stocks on hand and heavy orders being received for spring shipments will be in a position to make a material advance over quotations now ruling. We quote as follows: Painted, 3.30¢ @ 3.35¢; Galvanized, 3.90¢ @ 3.95¢; carload lots, 10¢ ℔ 100 lb less than above prices.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Pa., December 31, 1889.

Pig-Iron.—The year just closing has been one of the most eventful in the history of the Iron trade, but in its leading features it has not been materially different from what was expected. A year ago we made the statement that while prices at that time were unsatisfactory a still lower range was not improbable, and that after midsummer the advancing tendency would be such as to make a fair average for the year, and that in any event the volume of business during 1889 was likely to be the largest on record. Subsequent events prove that this view was not far out of the way, although prices went both lower and higher than was expected. This year it may not be as easy to outline the future, although the chances seem to be in favor of a larger business than ever during 1890. The question of prices is a more difficult problem to deal with. Ordinarily a considerable advance might be expected and it may come yet, but with so large a production and with the rapid development for maintaining or increasing the supply the trade are inclined to be conservative on that point. Some further advance is not at all improbable, but no one expects or wishes a recurrence of the events of ten years ago. But the conditions are so different from what they were then or at any previous time that there is really no basis for calculations in regard to the future. Experience therefore counts for very little in times like these. Our production of Pig-Iron is nearly three times greater than it was ten years ago, and before the close of next year it may be greater still. The decreased supply of foreign Iron, however, is equal to 1,500,000 tons per annum, and the falling off in the supply of Old Rails is also a considerable item, so that a large increase in the output of Pig-Iron is required to compensate for these deficiencies. Then, of course, the growth of the country has been immense, so that probably an average of nearly 5,000,000 tons more of Pig-Iron yearly is necessary to maintain the equilibrium. The coming year is expected to be far more than an average one, so that the indicated supply of nearly 9,000,000 tons may be none too much after all. In some quarters there is either a real or an assumed fear of scarcity, but was there ever a time when Iron was so scarce that it could not be had? The usual experience is in the other direction, and there is no reason to expect serious scarcity during 1890. The increased demand has been easily met so far, and will doubtless be met just as easily in the future, and every dollar advance will be that much premium for a still further supply. It should not be forgotten that a large proportion of the increased output is from furnaces running on Bessemer Iron, but a considerable portion of this is now used for purposes other than Rails. Steel is gradually displacing Iron, so that while there may not be so large an increase in the output of Mill Irons, the equilibrum is maintained by an increased production of material suitable for making Steel, which is rolled into plates, bars, shapes, &c. It is too soon yet to say much about prices, but the next 30 days ought to give some indication of the general tendency. At present $18 at tide for Gray Forge, $19 for No. 2 and $20 for No. 1 appear to be the ruling quotations, but there has been no great amount of business so far. Nearly all the large consumers placed orders some time ago at less money, and as yet only small lots are taken at the rates named. Sellers are very firm, nevertheless, and there is no reason to think that concessions could be had, but on the contrary anything like an active demand would easily lead to a further advance. The position is a waiting one, the appar-

ent advantage being with the sellers. The figures quoted to-day average $1.50 higher than those ruling a year ago, and $3 above those ruling in May, which was the lowest month in the year, and almost the lowest on record. Quotations on the first of each month during 1889 were as follows for tide water deliveries.

	No. 1 Foundry.	Gray Forge.
January	$18.50	$16.00
February	18.00	15.50
March	18.00	15.25
April	17.35	15.00
May	17.00	15.25
June	17.25	14.75
July	17.25	15.00
August	17.50	15.25
September	17.50	15.25
October	17.50	15.50
November	18.50	16.50
December	19.25	17.25
January, 1890	20.00	18.00

The number of furnaces in blast on the first of each month was as follows, not including Charcoal furnaces:

	Furnaces in blast.	Capacity per week.
January	264	142,452
February	257	136,705
March	253	138,694
April	253	138,087
May	242	133,714
June	236	126,157
July	225	130,690
August	225	133,997
September	234	132,741
October	248	139,010
November	256	152,872
December	262	156,372

Muck Bars.—There has been a pretty steady demand all through the year and prices have been steadier than in many other specialties, the advance from January 1 to date averaging about $2.50 ℔ ton. The lowest quotations were made during March, April and May, when $26 to $26.50 was accepted in a few instances, although $27 was the usual asking price. In June the reaction set in, which has continued up to this date, the advance being $1 ℔ ton each in June and July, 25¢ each in August, September, October and November, and $1 in December, the latest sale having been made at $31 at mill, as against $28.75 the year previous. Holders now quote $31.50 @ $32 at mill.

Billets.—The advance in Soft Steel Billets has been very important during the past three or four months. The opening quotation in January was about $28.50, at mill, from which there was a gradual sagging off to about $26, which quotation continued with slight fluctuations during March, April, May and June. In July the current changed, with an average advance of $1 ℔ ton per month during July, August, September and October, $3 in November and nearly as much during December. The advance from the lowest to the highest is therefore about $10 ℔ ton, or from January to December $8.50 ℔ ton, the latest sale reported being at $37, at mill, although a further advance is now asked.

Manufactured Iron.—The first half of the year was a trying time for manufacturers. The Bar trade suffered most, as prices were low and the demand entirely inadequate to the supply. The consequence was that many of the mills were on short time, and few, if any, more than paid running expenses. The last half of the year however, made ample amends for the deficiencies of the first half, as there was an abundance of business and fairly satisfactory prices. During the first quarter of the year prices were greatly demoralized, and although 1.75¢ @ 1.80¢ were nominally the lowest quotations, orders for a long time were placed at 1.70¢ and in some cases even that low rate was shaded. Towards midsummer a reaction set in, and although the advance has not been rapid, it has been maintained up to this date. Present quotations are 2¢ for Best Refined Iron, showing an advance on the year of 15¢ ℔ 100 ℔, or 30¢ from the low rates ruling during April and May. The improvement in the Bar trade has been largely due to the immense consumption among car builders, although all departments of trade have called for greatly increased quantities. The demand for Skelp Iron has not varied to any important extent. The first quotation in January was 1.82½¢, with a gradual decline to 1.75¢ in February, which quotation was continued until July, when 1.80¢ was quoted for that month and August; 1.85¢ for September, October and November, with small sales at 1.9¢ in December, and at the close 1.95¢ was asked. The feeling at the moment is in favor of higher prices, and it is probable that advanced quotations will rule in the course of a few days. The Plate trade has not been in very bad condition at any time, as there was always a market at about 1.9¢ to 1.95¢, delivered, so that the mills have been able to run full time almost without intermission. The demand has been from widely distributed sources, but the heaviest buyers have been the ship and bridge builders, and the users of structural work of various kinds. The outlook in these departments continues to be of the most encouraging character; the demand during the coming year promises to be better even than during the one now closing. The same remarks apply to the mills engaged in the manufacture of Shaped Iron. They are all crowded with work and have been for months past, and are likely to be for months to come. A feature of the trade during the past six months has been the gradual widening between the price of Iron and Steel. During the first half of the year there was not more than a tenth to a tenth and a half difference between the two nominally, and in some cases in which there was sharp competition the buyer was given the option of Iron or Steel at the same price for Bridge or Ship Plate. There is easily three to four tenths difference to-day, and steel is still relatively firmer than Iron. Prices during the year ruled as follows for Iron Plates, delivered Philadelphia or its equivalent. Opening in January at 2.05¢, they declined to 1.95¢ in February and 1.90¢ in March, remaining at from 1.85¢ to 1.90¢ until July, when they advanced to 2.1¢. During August they advanced to 2.15¢, in September to 2.2¢, were slightly firmer in October, and advanced to 2.25¢ in November, and to 2.35¢ in December, the latest quotations for the various qualities being as follows:

	Iron.	Steel.
Tank	2.35¢	2.75¢
Shell	2.65¢	3.00¢
Flange	3.25¢	3.25¢
Fire-Box	3.75¢	3.75¢
Angles	2.30¢	2.75¢

Steel Rails.—The demand for Rails has not been in proportion to other specialties, but prices have made a sharp advance nevertheless. Prospects for 1890 are considered much better than they have been for several previous years, although there may not be as many miles of new roads built as some people are inclined to predict. The opening price at Eastern mills in January was $28, and nominally so continued until August, but $27 and $27.50 were frequently accepted for desirable orders, and in some cases it is believed that $27 was shaded. During September a more confident feeling was manifested, and from $29 at the opening of the month an advance to $30 was established before the close. During October $31.50 was reached, in November $33, and early in December $35 became an established quotation, and so remains firm at the present time.

Old Rails.—An advance of a little over $4 ℔ ton may be noted since the first sale in 1889, which was at $23.75, and $5 from the lowest point, $22.50, which continued with slight variations during May, June, July and part of August. In September $23 was reached, in October $25, in November $26, early in December $27, and at the close $28 is bid, holders asking $28.50 to $29, Philadelphia, or at interior points.

Scrap-Iron.—From January to December the advance averages about $4 ℔ ton for No. 1 Wrought Scrap, and $5 from the lowest point which was reached, and which continued from March to July, with very slight fluctuations. The opening price in January was $21.50, declining about $1 during the spring months, recovering the loss in July, advancing $1 more in October, another $1 early in December, and a second $1 toward the close, at which time $26 is a firm quotation.

Chicago.

Office of *The Iron Age*, 59 Dearborn street,
CHICAGO, December 28, 1889.

The week just passed has been quiet in most branches, but more especially in those affected by stock-taking. Prices show no signs of weakening.

Pig-Iron.—The current demand is being met by Ohio and Southern Irons, and agents report a steady business in such brands, with an occasional inclination on the part of buyers to take round lots. The advance on Southern Iron which was forshadowed last week has taken place, prices having been marked up about 50¢ on all grades. The Ohio furnaces are dropping out one after another as their order-books get filled as far as they care to go into the future, so that a price made to-day on a round lot of Iron is no criterion of the range of values to-morrow. Bessemer is in some demand, but hard to get, and makers would want from $24 to $25 for it if they were in a position to take the business offering. Lake Superior Charcoal is quiet, but strong. Small lots in speculators' hands might be picked up at less than $23, but an order for a round lot would send the price up $1 or $2. Cash quotations are as follows, f.o.b. Chicago: Local Coke Foundry, No. 1, $20 @ $21; No. 2, $19.50 @ $20; No. 3, $18.50 @ $19; Bessemer, $24 @ $25; American Scotch (Blackband), No. 1, $21.25 @ $21.50; Ohio Silveries, No. 1, $19.75; Southern Coke, No. 1, $20.50 @ $21; No. 2, $20; No. 3, $19.50; Tennessee Charcoal, No. 1, $21; Alabama Car-Wheel, $25.50 @ $26.50.

Manufactured Iron.—Bar-Iron is quiet, but mill lots are still quoted at 1.95¢ @ 2¢, f.o.b. Chicago, for Common Iron, with every indication of still higher prices. Rolling mills at Birmingham, Ala., are now selling Bar-Iron at 2.10¢, delivered at Missouri River points, which is a litile under the Chicago price plus the freight thither. Plates are in fair demand, with a rising tendency, some mills asking $2 ℔ ton advance for deliveries in the next two months. Sheet-Iron is quiet, except Galvanized, which is in continued request. Prices are unchanged.

Old Rails and Wheels.—Very little has been done in this line. Consumers report stocks fair and are inclined to bear the market, but holders are not weakening and quote $26.25 @ $26.50 for Iron Rails. Old Car-Wheels are variously quoted at $19.50 @ $21.50, according to the position of buyer or seller, with some lots available at intermediate prices.

Nails.—Manufacturers' prices are $2.35 at mill with a 25¢ average for Cut Steel Nails and $2.85 at mill for Wire Nails. Orders are being received to some extent, but the demand is not very active at present. Jobbers' prices are unchanged at $2.60 @ $2.65 for Cut Steel and $3.15 for Wire, with the usual rebate for carloads.

Barb-Wire.—Business in this line is beginning to recover animation, jobbers reporting frequent orders for carloads and larger quantities. They quote 3.35¢ for small lots of Painted, 3 25¢ for carloads and 60¢ ₱ 100 lb advance for Galvanized.

New York.

Office of *The Iron Age*, 66 and 68 Duane street, NEW YORK, December 31, 1889.

American Pig.—In a published interview the president of the Thomas Iron Company is reported as stating that "while we have not opened our books for 1890, yet we have been obliged to book orders for 90,000 tons of Pig-Iron. These orders have been taken at an advance of 20 ¢ over the prices for 1889. We were obliged to take these orders from some of our large consumers who make contracts running for a long time." The figure 20 ¢, it is assumed, must have been a slip of the tongue or an error in the types. There is comparatively little doing for current dealing. What Iron is so selling is being placed at $19.50@$20 for No. 1 Foundry, while Gray Forge is selling at $18 at tidewater. Southern sellers are relatively higher. Among the recent sales of Bessemer Pig we may note one block of 15,000 tons for 1890 delivery by a New York company, at $21 at furnace, to an Eastern Pennsylvania steel mill.

Spiegeleisen and Ferromanganese.—There have been some inquiries in the market for May delivery and beyond, but they have not resulted in any business; 20 ¢ Spiegeleisen has been offered for February delivery at $37.50, which is the nominal quotation. Importers claim that there have been large sales of Spiegeleisen abroad at 120/ to English mills, which would make the cost of importation, duty paid, fully $38.50. It is asserted that the tendency is still upward. Ferromanganese is quiet at $95 @ $98 for forward delivery.

Billets.—Only a moderate business has been done. In the East the few mills which are makers of Billets have nothing to sell. Nominally the quotation is $37 for Soft Billets at Eastern mill. Small lots have been sold in Wheeling at that price.

Wire-Rods.—There has been a good deal of activity. It is reported that the Chicago mills are sold up and that as a result thereof some of the buyers in that district have come further East for supplies. There have been sales, too, east of the Allegheny Mountains and the aggregate of the business is reported to have been large. We quote $55, delivered, at Eastern buyers' mill.

Steel Rails.—The market is very quiet, but firm. Not a single transaction of any magnitude has been reported during the week, nor is there any heavy amount of work in such a position as to be closed within the next few days. Eastern mills generally quote $35, at mill, for round lots.

Financial.

The year 1890 opens auspiciously. Within the last few days business men representing almost every department of activity have been questioned with reference to the future, and the views thus gathered are singularly unanimous in bespeaking a season of unusual prosperity. At the same time there are possible contingencies, more or less of monetary character, such as may rise from disturbance of the currency or the silver discussion, tariff questions, &c., which forbid undue elation or new schemes of speculative enterprise. Not New York alone, but Philadelphia, Boston, St. Louis, Cincinnati, New Orleans and a dozen smaller trade centers, with diverse and rival interests and differing conditions, all agree that the business outlook is most favorable. Reasons for confidence are found in the increased volume of trade; activity in the iron business; the improved condition of railroad and other transportation interests; the ease with which collections are being made, and the many channels opening for the employment of money; but the basis for all expectations lies in the abundant crops of grain and cotton now entering into consumption. The coal and wool interests languish, for which fact ready explanation is found in a winter of unparalleled mildness. A favorable sign, noticed by a leading banker, is the absence of speculative or fancy values in any direction. Labor troubles are almost unheard of, indicating a prosperous condition of the various industries. Railroads have not cars enough to handle the traffic and warehouses are not large enough to house the grain being forwarded to market. Ocean freights have risen to a point where even sailing ships can profitably take charters, and steamers of every description in port or to arrive are already engaged up to the beginning of February. Owners of deep-water tonnage, however, see a cloud in the enormous expansion which has taken place in ship-building in the United Kingdom, portending a glut of freight-carriers. Contracts were made when wages were low and materials cheap. Costing little and being equipped with triple expansion engines and all manner of labor-saving devices, they can be navigated economically, compelling the old style of ships to withdraw from competition. On the lakes different conditions prevail, the prospect being that ore and other freight will be offered at the opening of navigation far in excess of the tonnage available for transportation. In reference to the coastwise trade much is expected in some quarters as a result of the Pan-American Congress. Railroads are cutting rates in the West, since the natural falling off in traffic at this season. At a meeting to be held in New York January 14, arrangements will be made for the busy season expected with the opening of spring.

The stock market is stagnant, transactions being on a limited scale. High rates of interest discourage speculation. The greatest depression was in Reading, St. Paul and Missouri Pacific. The statement of the Delaware, Lackawanna and Western showing earnings on the stock equal to only 7.90 ¢ for the year, against 13.35 ¢ in 1888, called renewed attention to the unfavorable condition of the anthracite trade. On Monday the dealings in stocks at the opening were large and unsettled in character, due partly to the advance in the Bank of England rate, but after the first hour the pressure ceased and there was a general recovery in values. The rates for money on call were stringent up to midday, when the announcement that Secretary Windom would pay the January interest instantly brought loanable funds to the market. The afternoon's speculation developed no new features. Trust stocks were inactive and fairly well supported, while bonds were active, strong and higher.

United States bonds are quoted as follows:

U. S. 4½s, 1891, registered	104⅝
U. S. 4½s, 1891, coupon	105½
U. S. 4s, 1907, registered	126
U. S. 4s, 1907, coupon	127⅞
U. S. currency 6s	116

The monetary situation is recognized as an important factor, on account of the exceptional demand for currency in the interior to move extraordinary crops—grain, provisions and cotton—and some influence has attended the simultaneous withdrawal of Government funds from depository banks. Speedy relief will be expected from the heavy disbursement of money for the payment of interest and January dividends. An authority on the subject presents a compilation of figures showing that the interest payments for 1889 by railways and cognate corporations will amount to $238,370,242, against $210,289,281 in 1888, an increase of $27,780,961, while the dividend payments will foot up to $102,091,089, against $106,341,399 in 1888, a decrease of $4,250,310, leaving the total disbursements for interest and dividends at $340,461,331, compared with $316,730,680 in 1888, a net gain of $23,730,651. The weekly bank statement was unfavorable, showing a loss in reserve of $1,372,050, which reduces the surplus reserve to $2,021,675. The banks lost heavily through shipments of currency to the South, but gained by the Sub-Treasury operations. Loans were expanded $2,217,500, while legal-tenders and specie combined decreased $1,286,000. The supply of commercial paper is fair, but the demand is confined to out-of-town buyers. We quote 60 to 90 days' indorsed bills receivable at 5¼ @ 6 ¢, first-class four-months commission-house names at 6 @ 6½ and good single names at 6½ @ 7½. Time money on first-class stock collateral is quoted at 6 ¢ for 30 days to six months.

The Bank of England governors held an extraordinary meeting on Monday, and marked up the rate of discount to 6 ¢, the highest since the early winter of 1882. This step was taken to prevent further loss in the bank's bullion and reserve, which is extremely low. This movement encouraged money-lenders to charge higher rates. While many of the national banks and trust companies charged no more than 6 ¢, a glaring exception was the First National Bank, which sent out notices that loans would be marked up to 25 ¢. On these facts there was a scramble among borrowers, and as high as 40 ¢ was paid on 'Change for call loans. One effect of the high rates for money was to cause further weakness in foreign exchange, and Brown Bros. & Co. twice reduced their postal rates for sterling ½, namely to 4 80 @ 4.84 for 60 days and demand bills. But the tone continued weak at the decline. London has been a seller of Americans, and the return of our stocks is the main reason why foreign exchange has not ruled low enough here to force the importation of gold.

One gratifying feature in the year just closed is the tendency toward better railroad dividends. The following shows the dividends paid by leading corporations for a series of years:

Company.	1883.	1885.	1887.	1888.	1889
N. Y. Central	8	3½	4	4	4
N.Y., L. E. & W. pf.	6	....	....	....	....
Pennsylvania	8½	5	5½	5	5
Baltimore and Ohio	10	10	4	....	....
L. S. & Mich., S.	8	....	4	4	5
Michigan Central	5	....	4	4	4
Canada Southern	2	....	2½	2½	2½

The merchandise markets are generally quiet. Flour is dull and nominal in the absence of demand and there is little new business in wheat. Corn is strong and active. Coffee is dull. Provisions have accumulated here because of difficulty in getting ocean freight room and prices, particularly of lard, declined. In sugar there is nothing doing. Spot cotton is dull.

Charles M. Preston, of Kingston, was appointed Bank Superintendent, to succeed Willis S. Paine.

The Director of the Mint has estimated, and the Secretary of the Treasury proclaimed, the values of the standard coins of the nations of the world to be followed in determining the values of all foreign merchandise imported on or after January 1, 1890. The circular of January 1, 1890, marks an important change, in that the values of the silver coins are higher than for the preceding year, whereas since 1879 the values of foreign coins have each year been estimated lower than for the preceding year.

The New York Quotation Company have been incorporated by William H. Baker, Theodore L. Cuyler, Jr., and John O. Stevens. The capital is $500,000 and may be increased to $1,500,000.

Exports of merchandise from this port for the week were valued at $5,579,000.

Bradstreet's reports 11,719 failures in the United States for the year 1889, with liabilities of $140,359,490 and assets of $70,599,769. This is the largest number of failures and the liabilities are greater than for any year in the past five. The increase in the number of failures over 1888is 1132; increase in liabilities, $20,117,088; increase in assets, $8,599,358. New York City had 673 failures in 1889, with liabilities of $10,539,060; assets, $4,036,739, against 529 failures in 1888, with liabilities of $17,022,886 and assets, $7,078,870.

Metal Market.

Copper.—At the time of our last week's report the quotation in London was £50 for both spot and futures, the quotation to-day being £50 spot and £50. 5/ futures, sales summing up 500 tons. The holiday lull has restricted business here, but any available spot lots find no difficulty in meeting with a buyer within the range of 14.25¢ @ 14.50¢ Lake, 13.25¢ @ 13.50¢ Montana and Arizona, and 13¢ Common Casting. Some bankers' sales of Lake are said to have been made at 14.25¢, and at Boston futures were sold up to 14.50¢ for delivery up to April. During the first ten months the export of Pyrites from Spain was 677,947 tons, against 699,838 in 1888, and 650,535 in 1877; of precipitate it was 26,887 tons against 24,152 and 23,825. Germany produced in 1888 as per official returns now published 21,569 tons of Ingot-Copper, against 20,848 in 1887. New South Wales turned out last year 3899 tons fine. On December 28, at Paris, the meeting of the old Comptoir d'Escompte shareholders accepted a compromise whereby the directors offer them 24,000,000 francs. Chairman Hentsch's offer for himself of 1,500,000 francs was rejected. After having been kept in abeyance for a couple of years, the Spanish Government has decreed that, to date from January 1, 1890, the roasting of ores in the open air at Huelva is to be reduced to 50 % of what it has hitherto been.

Tin—Has been flat and inactive on both sides of the Atlantic. The London quotation when we reported last was £96 for both spot and futures. To-day the former is cabled £97 5/, and the latter £97 10/, sales aggregating 610 tons for the week. Sales have been larger to-day, and the market winds up at 21¼ @ 21½¢ spot. *Tin Plates.*—The week under review has been one of the dullest known in the trade, absolutely no orders coming to brokers or dealers. The effect has been a weakening in prices which may result in business after the turn of the year. Cable reports of English markets since Christmas are very significant, Iron, Steel and Tin all being again on the rise, which must immediately affect the price of Tin Plates, showing that the December weakness was only a temporary, natural reaction. The total export from England during the first eleven months has been 401,391 tons as compared with 362,317 in 1888, and 326,034 in 1887. Out of these amounts the United States received 314,927, 271,037 and 247,042 tons respectively. We quote at the close, per box: Siemens-Martin Steel, Charcoal finish, $5.50 @ $6; Coke finish, $5.20 @ $5.25; Coke Tins, Penlan grade, $4.70 @ $4.80; J. B. grade, $4.80 @ $4.85 and Wasters, $4.60.

Lead.—The week under review has been an excessively dull one, only a couple of hundred tons Common Domestic being taken in the open market at 3.85¢, which is the closing spot figure, while the price West is 3.60¢. At the Metal Exchange 16 tons January brought 3.90¢. The export of Pig-Lead was 107,084 tons, against 109,212 in 1888 from Spain during the first ten months and 111,357 in 1887. Germany produced last year, as per official returns now published, 96,995 tons of Pig-Lead, against 94,921 in 1887. During the first ten months of 1889 the movement was as follows: Import, 690 tons, against 6560 in 1888; export, 26,431 tons, against 28,751 tons in 1888.

Spelter.—As we proceed the market for domestic is gaining in strength, and has ruled 5.45¢ @ 5.50¢. The outside figure was not yet paid here, but the Western parity is 5.50¢ laid down here. The tendency is upward, and ere long 5¼¢ may be reached. Silesian, £24. 7/6 in London, may be nominally quoted 7¢. Spanish exportation of Calamine has during the first ten months been 20,235 tons, against 24,361 in 1888, and 21,473 in 1887. As per official returns just published Germany produced last year 133,224 tons of Spelter, against 130,494 in 1887. The Vieille Montagne Company have produced this year 52,000 tons of Spelter; the average price obtained in 1889 is 3.50 francs the 100 kg. greater than in 1888, so that for the current year 25 francs ₱ share dividend will be declared. The company turned out 55,000 tons of Sheet-Zinc during the year. Advices from Breslau, Silesia, dated December 20, state that both Spelter and Sheet Zinc continue as lively as ever, and that several smelting works have made large sales for forward delivery all the way to October 1, 1890, nearly all Silesia can produce up to July 1 having been sold out by anticipation. Notable amounts of Spelter were being shipped to Russia and Austria, where production cannot cope with the increased consumptive demand. Prices remained firm, prime brands refined, such as W. H. Giesche Heirs, at 48 @ 49 marks and other good brands at 46 @ 47.

Antimony—Has remained moderately active and steady at 31¢ Cookson and 22½¢ Hallett.

New York Metal Exchange.

The following sales are reported:

MONDAY, December 30.

10 tons Tin, March	21.15¢
100 tons Iron, spot	$18.50

TUESDAY, December 31.

10 tons Tin, January	21.20¢
10 tons Tin, February	21.20¢
10 tons Tin, March	21.20¢
10 tons Tin, spot	21.10¢
10 tons Tin, April	21.20¢
30 tons Tin, February	21.10¢
16 tons Lead, January	3.90¢

Coal Market.

The year goes out with little encouragement for the Anthracite Coal mining companies, the simple fact being that production is still far in excess of the wants of consumers, despite three-quarters time at the mines and other efforts to establish a healthful relationship between supply and demand. The long-expected blizzard delays its coming, and accumulation at shipping ports goes on. In the interior, likewise, stocks are ample. At Buffalo, for instance, the reported estimate of Coal in hand is 300,000 tons. At the New York agencies absence of orders is the common complaint. Circular prices afford no indication of the market and for some time past have been practically abandoned, sales having been made, according to Philadelphia authority, at "a cut of from 50¢ to 70¢" per ton. In New York a concession of at least 30¢ per ton for Stove has been not unusual and other sizes in like proportion. Respecting reports of terrible destitution in the mining region, the Pottsville *Miners' Journal* pronounces them utterly untrue:

"Throughout Schuylkill County," says the editor, "there is less actual want among these hard-working people than is usually the case at this season of the year. Our advices show that the most suffering is likely to fall upon the miners of the Shamokin field. Even there, however, the situation is not as bad as it has been painted. There are but few cases of actual want and none of starvation. Neither are there likely to be any. The hope is entertained that there will be a resumption early in the new year, and if this proves the case there will be no widespread suffering. Our correspondent there asserts that the individual cases of want are not to be ascribed entirely to the dull times in the Anthracite trade."

The official statement of shipments of Anthracite for the week and year, the week ending December 31 estimated, is as follows:

	Dec. 21, 1889. Tons.	Dec. 22, 1888. Tons.	Difference. Tons.
Wyoming.	332,746	374,696	Dec. 41,950
Lehigh....	137,605	99,182	Inc. 38,423
Schuylkill.	205,152	145,523	Inc. 59,629
Totals....	675,503	619,401	Inc. 56,102
Total for year...	34,752,328	37,603,361	Dec. 2,851,033

Bituminous Coal is still deficient in supply, owing to inadequate transportation, and prices are arbitrary, according to circumstances and conditions.

It was decided at Pittsburgh, December 28, that prices for the coming month for Coke will not be advanced. A few operators, it is understood, desired that prices should be increased, but H. C. Frick was opposed to any change.

Imports.

Hardware, Machinery, &c.

American Metal Co., Mdse., cs., 21
Boker, Hermann & Co., Anvils, 60; Hardware, cs., 16; do., cks., 2; Arms, cs., 36
Goodwin, J. R. & Sons, Mach'y, case, 1
Godfrey, Chas. J., Arms, cs., 2
Hartley & Graham, Arms, cs., 10
King, Hezakiah, Mdse., cs. 3
New York Arsenal Gun Mountings, pgs., 32
Newton & Shipman, Files, cks., 4
Sheldon, G. W. & Co., Mach'y, pgs., 14
Thebaud Bros., Mach'y, pgs., 50
Van den Toorn, W. H., Arms, cs., 4
Wielbusch & Hilger, Chains, cks., 29; Arms, cs., 3
Westermann, H., Arms, cs., 12
Witte, John G. & Bro., Cutlery, cs., 11
Wiebusch & Hilger, Anvils, 158; Mdse., cs., 2
Order—Crank-Pin Forgings, 58; Piston-Rod Forgings, 6

British Iron and Metal Markets.

[*Special Cable Dispatch to The Iron Age.*]

LONDON, TUESDAY, December 31, 1889.

There has been a large business in Pig-Iron, chiefly speculative, and the favorable exhibit of the Scotch statistics has strengthened the market, warrants advancing to 64/. Production is shown to have decreased 29,000 tons the past year, against an increase of 96,000 in 1888 over 1887 Home consumption has increased to the extent of 174,000 tons, against 113,000 tons, and a gain in exports of 22,000 tons is shown against 11,000 tons last year. Returns covering all descriptions of Pig-Iron show an increase in consumption the past year of 196,000 tons on top of 124,000 tons gain in 1888 over the previous year. Prices for makers' brands of Scotch, Middlesborough and Hematites are very firm, as are also those for Spiegeleisen and Steel generally. Bessemer Pig is quoted 1/6; Middlesborough Pig, 2/, and Steel Rails, Blooms and Wire Rods, 2/6 higher.

Inquiries for Tin Plate have been more numerous, but no increase of business has resulted, buyers and sellers being still far apart on prices. The Baglan Bay Company have been registered to acquire works in Baglan and Briton Ferry.

Business in Pig Tin has been light, but the market has shown a firm tendency, with sales of prompts at from £96. 10/ up to £97. 5/, the highest figures having been reached to-day.

Copper has been fairly active in a speculative way, with up to £50. 7/6 paid for Merchant Bar, but the trade demand at present is quiet.

The London Metal Exchange committee, in whose hands the matter was placed, announce their sanction of dealings in Pig-Iron warrants on and after January 2. The result is watched for with interest.

It is stated that large purchases of Rails have been made in this market by importers in the United States.

Holders of Old Iron Rails and Scrap are very unreserved in their offerings and prophesy much higher prices.

Scotch Pig.—Prices very firm for all brands, and the market fairly active.

No. 1 Coltness,	f.o.b.	Glasgow	80/
No. 1 Summerlee,	"	"	79/
No. 1 Gartsherrie,	"	"	78/6
No. 1 Langloan,	"	"	78/6
No. 1 Carnbroe,	"	"	67/
No. 1 Shotts,	"	at Leith	78/6
No. 1 Glengarnock,	"	Ardrossan	78/6
No. 1 Dalmellington,	"	"	70/
No. 1 Eglinton,	"	"	67/

Steamer freights, Glasgow to New York, 2/; Liverpool to New York, 10/.

Cleveland Pig.—Purchases for consumption only fair, but speculation active and prices higher. No. 3 Middlesborough quoted 62/6 for prompt.

Bessemer Pig.—The position of the market continues strong and the demand is good. West Coast brands, mixed numbers, 79/, f.o.b. shipping point.

Spiegeleisen.—Sellers very firm and the demand fairly active. English 20-% quoted 97/6, f.o.b. at works.

Steel Rails.—The market very firm, but the demand only fair. Heavy sections quoted at £7. 2/6 and light sections £7. 7/6 @ £7. 17/6, f.o.b. at N. W. England shipping point.

Steel Blooms.—There is still a great demand and prices remain very firm. We quote £6. 10/ for 7 x 7, f.o.b. at N. W. England shipping point.

Steel Billets.—Sellers very firm and the demand moderately active. Bessemer, 2½ x 2½ inch, £6. 7/6, @ £6 10/. f.o.b. at N. W. England shipping point.

Steel Slabs.—The market very firm and the demand good. Bessemer, £6. 10/. f.o.b. at N. W. England shipping point.

Old Rails.—Holders very firm at higher prices and demand moderately active. Tees quoted at £3. 12/6 @ £3. 15/, and Double-Heads £3. 15/ @ £4., f.o.b.

Scrap-Iron.—A fairly good demand and the market very firm. Heavy Wrought quoted £3 @ £3. 5/.

Crop Ends.—No change in prices but the market firm and demand better. Bessemer quoted £3. 12/6 @ £3. 15/, f.o.b.

Tin-Plate.—Buyers and sellers apart and business restricted but sellers very firm. We quote, f.o.b. Liverpool:

IC Charcoal, Alloway grade	@ 18/
IC Bessemer Steel, Coke finish	16/3 @ 16/6
IC Siemens " " "	16/6 @ 16/9
IC Coke, B. V. grade	15/9 @ 16/
Charcoal Terne, Dean grade	14/6 @ 15/

Manufactured Iron.—There has been little doing in this line. Prices are 5/ higher in Sheets but otherwise unchanged. We quote, f.o.b. Liverpool:

		£	s.	d.		£	s.	d.
Staff. Marked Bars		9	10	0	@	0	0	0
" Common "		8	0	0	@	8	10	0
Staff. Bl'k Sheet, singles		0	0	0	@	10	0	0
Welsh Bars (f.o.b. Wales)		7	12	6	@	7	17	6

Copper.—Demand fairly active to-day and the market firm. Chili Bars quoted at £50. 2/6, spot, and £50. 5/ three months' futures. Best Selected, £56.

Tin.—The market strong and demand quite active. Straits quoted at £97. 2/6, spot, and £97. 10/ for three months' futures.

Spelter.—Steady market with the demand fair. Quoted at £24. 5/ for Ordinary Silesian.

Lead.—Demand moderate and slight movement of prices. Quoted at £14. 2/6 for Soft Spanish.

MARKETS BY TELEGRAPH.

TUESDAY AFTERNOON.

Pittsburgh

No change in the situation. Prospects for the new year generally regarded as encouraging.

Cincinnati.

A stronger and more confident feeling prevails among sellers of Pig-Iron, while consumers are more willing buyers. But one or two large contracts have been made at about 50¢ ℔ ton under the prices generally current. Southern furnaces are disposed to demand higher prices, and Northern stacks have secured more remunerative prices since Christmas, yet no little misunderstanding has arisen from the practice of quoting prices based upon the old and the new freight rate, according to the inference to be conveyed. The prices generally admitted to be current are $19, $18.50 and $18 for Nos. 1, 2 and 3 Southern Foundry, but a large local firm insists that these prices can be and are discounted 50¢, and this firm has secured the order for 10,000 tons referred to in letter for delivery during the entire year, instead of six months as previously reported. No. 1 and No. 2 Soft are generally held at $18.50 and $18; but these grades, too, are generally believed to have been shaded 50¢ ℔ ton. Six thousand tons Southern Grey Forge and Mottled have sold at $14.50 and $14 at furnace respectively. Forty-nine hundred tons Southern Car-Wheel at $24.55, on cash basis Cincinnati; details of sales in letter. Inquiries are active and there is a firm feeling at the close.

St. Louis.

There is no change to report. The market maintains the firm position noted in former reports, and, taking all things into consideration, the outlook for the new year is as bright as the most sanguine could wish for.

Chicago.

A great deal of Pig-Iron has been quietly picked up in the past few days, and inquiries are coming forward from large consumers of both Coke and Charcoal. Makers of Lake Superior Charcoal are working up to $23.50. Southern Car-Wheel is 50¢ higher than last quotations. Canadian buyers of Coke Iron have appeared in this market, and have already made large purchases in Cincinnati. Finished Iron is quiet but stronger. The old year closed with a firm feeling, and good prospects along the entire line.

Cleveland.

The Pig-Iron market is remarkably active for the holiday season and sales of Bessemer at $25 cash at the furnace and of Mill Iron at $18.50 are reported to-day. The Ore men are resting, but promise to resume in ten or fifteen days.

Foreign Markets.

EQUIVALENTS

	Cents.
Franc, Peseta or Lira	19.3
Florin (Netherlands)	40.2
Florin (Austria)	35.9
Milreis (Portugal)	$1.08.
Milreis (Brazil)	54.6
Mark (Germany)	23.8
	Pounds
Kilogram	2.205
Picul	134.

BRAZIL.

PARA, December 26, 1889.—*India Rubber*—Is getting scarce and has advanced from 2200 reis ℔ kg. to 2400. Receipts since the 1st inst., 950 tons, being 40 % less than the average of the previous three years and leaving the stock on hand 75 tons. The market is strong and holders are not free sellers. *Exchange* here dropped from 25⅞d @ 24½d ℔ milreis.—*Per cable direct.*

EAST INDIES.

COLOMBO, CEYLON, November 14, 1889.—*Plumbago*—Has been quite firm at the following quotations in rupees ℔ ton: Large Lumps, 220 @ 250; Ordinary Lumps, 200 @ 230; Chips, 115 @ 135, and Dust, 85 @ 100. *Ebony.*—Some business has been done at 150 rupees ℔ ton. Plumbago shipments have been distributed as follows since October 1: To England, 10,055 cwt.; to Hamburg, 600; to Bremen, 368, and to the United States, 19,672, together 30,695 cwt., against respectively 15,603, 37,618 and 33,784 in 1888–1886. *Exchange.*—Six months' sight on London, 1/5⅛.—*Volkart Bros., Ceylon and Malabar Coast, through their agent in New York, Mr. John W. Greene, 82 Wall street*

SPAIN

BILBAO, December 7, 1889.—*Iron Ore*—A few single cargoes of Rubios Superiores have been taken at 8/3 @ 8/9, while nothing was done in Campanil owing to scarcity of supply. The nomial quotation at the close is 8/6 @ 8/9 the former and 10/3 @ 10/6 the latter. Shipments for the week reached 95,849 tons; since January 1, 3,624,745 tons, against 3,581,130 in 1888, aud 3,947,128 in 1887. *Pig-Iron.*—There were shipped to Italy during the week 1919 tons, while coastwise 809 tons left our harbor. Shipments of ores and metals from Spain during the first ten months:

	1887. Tons.	1888. Tons.	1889 Tons.
Calamine	21,473	24,361	20,235
Pyrites	650,535	699,838	677,947
Iron Ore	4,615,245	3,949,231	4,218,553
Pig-Iron	94,619	58,542	62,471
Precipitate	23,825	24,152	26,887
Quicksilver	1,122	891	1,710
Pig-Lead	107,084	109,212	111,084
Totals	5,513,903	4,866,227	5,118,887

—*Bilbao Maritimo y Comercial.*

BELGIUM.

BRUSSELS, December 21, 1889.—*Iron.*—The Belgian markets in Finished Iron remain very firm on the basis of 22 francs the 100 kg. for Sheets No. 2. Pig-Iron remains tolerably well sustained, although there has been some realizing of profits by certain dealers who resold foreign slightly below the market. Out of 48 blast-furnaces in Belgium 33 are in operation and 15 blown out. The following table shows the Iron and Steel movement in Belgium during the first 10 months:

	Importations. 1889. Tons.	1888. Tons.	Exportations. 1889. Tons.	1888. Tons.
Iron Ore	1,542,249	1,457,041	136,314	128,579
Ingot Steel	4,105	969	2,788	4,576
Steel Rails	862	213	50,271	51,536
Other Rolled Steel	2,686	2,119	21,369	19,968
Wro'ght Steel	1,185	483	5,533	2,910
Pig-Iron	181,439	170,724	8,345	5,154
Scrap-Iron	17,293	21,631	4,087	2,772
Iron Wire	2,602	2,961	4,021	3,263
Iron Rails	607	176	7,366	9,827
Sheet-Iron	1,541	1,094	44,998	34,990
Finished Iron	9,963	6,801	204,192	192,164
Nails	479	434	11,066	9,856
Wrought-Iron	3,028	3,312	20,366	19,220
Castings	1,931	727	19,574	14,110
Totals	1,769,970	1,668,685	549,290	501,925

—*Moniteur des Intérêts Matériels.*

Hardware.

During the past week merchants and manufacturers have for the most part been occupied in closing up the business of the year, and comparatively few goods have been purchased. The market is, however, characterized by the strong tone which has for some time prevailed, and in certain lines there have been still further advances. Taken as a whole the year's business has been very satisfactory, and that of the last few months especially so, and the new year opens with every prospect of an excellent trade at more remunerative prices than have for some time ruled.

Barb-Wire.

The Barb-Wire market continues to be characterized by a strong tone, and manufacturers are not apparently anxious to secure orders at current prices, anticipating that these prices are certain to be maintained and may possibly be advanced. Referring to the condition of the market, Freeman Wire and Iron Company, St. Louis, Mo., under date December 30, say to the trade:

Our Eastern advices of this date confirm a further advance on Billets and Wire Rods. In fact, Eastern mills on raw materials are very independent and loath to sell even at the latest advance prices. This unquestionable advancing attitude, coupled with the opinion of all Steel makers that the market will continue upward until late in the summer of 1890, compels us to withdraw all quotations.

Cut Nails.

The New York market remains quiet and steady at $2.15 on dock for carload lots of Iron Nails. The position of the article is very favorable and the advances in cost through the rise in raw materials and in wages are likely to have their effect. Cut Nails have so long been in a demoralized condition that the majority of buyers can apparently not realize that conditions have changed and that even the advance from the lowest to the present figures does not fully represent the change in those conditions.

Miscellaneous Prices.

We give herewith the revised lists of Machine-Bolts, Lag-Screws and Skein-Screws, Forged Set-Screws and Tap-Bolts and Bolt-Ends, revised and adopted December 17, to go into effect January 1. We also give the revised list of Square and Hexagon Hot-Pressed Nuts, revised and adopted December 18, to go into effect January 1.

The manufacturers of White Enameled and Tinned Hollow-Ware, such as Maslin Kettles, Boilers and Sauce Pans, have advanced prices 5 per cent., to take effect January 1.

The market for Coil Chain continues strong and advancing. Manufacturers are full of orders and prices have advanced from $\frac{1}{16}$ to $\frac{1}{4}$ of a cent per pound.

The recent advances in crude Rubber are having a marked effect upon the manufacturers of goods into which the raw material enters largely, such as Belting, Hose, &c., and intimations are thrown out that an advance in the prices of these goods is likely to occur. The greater part of crude Rubber is produced in Brazil and any serious troubles in that country will have a decided effect upon the market.

Advances are looked for in those lines of Brass Goods, particularly in the heavier lines, which have not yet advanced in sympathy with the raw material. In the meantime the market for these goods is very strong.

United States Standard List.—Prices Revised and Adopted December 18, 1889, to Take Effect January 1, 1890.

SQUARE AND HEXAGON HOT-PRESSED NUTS.

Short diameter.	Thickness.	Hole.	Size of Bolt.	Price per 100 pounds.	
				Square.	Hexagon.
$\frac{1}{8}$	$\frac{1}{4}$	0 185	$\frac{1}{4}$	$13.00	$20.00
$\frac{19}{32}$	$\frac{5}{16}$	0.240	$\frac{5}{16}$	12.00	18.00
$\frac{11}{16}$	$\frac{3}{8}$	0.294	$\frac{3}{8}$	10.50	14.00
$\frac{25}{32}$	$\frac{7}{16}$	0.344	$\frac{7}{16}$	10.00	13.00
$\frac{7}{8}$	$\frac{1}{2}$	0.400	$\frac{1}{2}$	9.00	11.20
$\frac{31}{32}$	$\frac{9}{16}$	0.454	$\frac{9}{16}$	9.00	11.20
$1\frac{1}{16}$	$\frac{5}{8}$	0.507	$\frac{5}{8}$	8.70	10.50
$1\frac{1}{4}$	$\frac{3}{4}$	0.620	$\frac{3}{4}$	8.50	10.00
$1\frac{7}{16}$	$\frac{7}{8}$	0.731	$\frac{7}{8}$	8.40	9.90
$1\frac{3}{8}$	1	0.837	1	8.20	9.70
$1\frac{13}{16}$	$1\frac{1}{8}$	0.940	$1\frac{1}{8}$	8.20	9.70
2	$1\frac{1}{4}$	1.065	$1\frac{1}{4}$	8.40	9.90
$2\frac{3}{16}$	$1\frac{3}{8}$	1.160	$1\frac{3}{8}$	8.50	10.00
$2\frac{3}{8}$	$1\frac{1}{2}$	1.284	$1\frac{1}{2}$	8.80	10.30
$2\frac{9}{16}$	$1\frac{5}{8}$	1.389	$1\frac{5}{8}$	9.00	10.50
$2\frac{3}{4}$	$1\frac{3}{4}$	1.491	$1\frac{3}{4}$	9.30	10.80
$2\frac{15}{16}$	$1\frac{7}{8}$	1.616	$1\frac{7}{8}$	9.50	11.00
$3\frac{1}{8}$	2	1.712	2	9.70	11.20
$3\frac{5}{16}$	$2\frac{1}{8}$	1.836	$2\frac{1}{8}$	10.00	11.70
$3\frac{1}{2}$	$2\frac{1}{4}$	1.962	$2\frac{1}{4}$	10.00	11.70
$3\frac{11}{16}$	$2\frac{3}{8}$	2.086	$2\frac{3}{8}$	10.30	12.20
$3\frac{7}{8}$	$2\frac{1}{2}$	2.176	$2\frac{1}{2}$	10.50	12.40
$4\frac{1}{4}$	$2\frac{3}{4}$	2.426	$2\frac{3}{4}$	11.00	13.00
$4\frac{5}{8}$	3	2.629	3	11.50	13.50

The Stanley Rule and Level Company, New York and New Britain, Conn., issue the following discount sheet, January, 1890. It will be observed that no changes are made from the sheet of a year ago except by the addition of Duplex Levels and Level-Sights, together with a Nosing Attachment to Plane No. 45 and an improved condition of some of the parts to this tool, as referred to in the company's advertisement on page 81. The discount sheet is as follows, subject to a discount of 10 per cent. for cash in 30 days:

	Discount per cent.
Awl Hafts	45
Awls, Patent Pegging	45
Beader, Stanley's Universal	20
Bevels, Sliding T	60
" Patent Flush Eureka	30
Bit and Square Level	20
Box-Scraper, Adjustable	30
Brad-Awls, Handled	30
Clap-Board Marker	20
" Gauge	20
Chalk-Lines, Reels and Awls	30
Carpenters' Tool Handles	30
Chisel-Gauge	20
Countersinks, Wheeler's Patent	30
Dado, Filletster, Plow, &c., combined	30
" Adjustable	20
Gauges	60
" with inproved face-plate	60
Handles, Brad-Awl	30
" Plane	40
" Saw	40
" Screw-Driver	50
Hammers, Magnetic	30
" Tack, No. 4	30
" Steak	30
" Upholsterers'	30
Hollows and Rounds for Plane No. 45	20
Level, Bit and Square	20
" Glasses	70
" Sights	20
Mallets, Hickory	20
" Lignumvitæ	20
Miter-Boxes	20
" Squares	30
" Try-Squares	30
Odd-Jobs, Stanley's	20
Plumbs and Levels, non-adjustable	70
" " Patent adjustable	70
" " Duplex	70
" " Nicholson's Patent	30
" " Iron Frame	30
" " Machinists'	30
Pocket Levels	70
Planes, Bailey's Adjustable Iron	40
" " " Wood	40
" " " Block	40
" Stanley " Iron	40
" " " Wood	40
" " " Block	40
Plane-Irons	40
Miscellaneous Planes:	
Planes, Beading	20
" " Rabbet and Slitting	20
" Chamfer	20
" Floor	20
" Nosing—a new attachment for Plane No. 45; price, $1	20
" Rabbet	20
" Rabbet and Filletster	20
" Router	20
" Tongueing and Grooving	20
" Victor Adjustable	20
Plow Filletster, &c., combined	30
" and Matching Plane, Bull-Nose	20
Plumb-Bobs, Adjustable	30
Roofing-Brackets	20
Rules, Boxwood, Stanley's	80
" Ivory "	50
" " Stearn's	50
" Miscellaneous, Stanley's	60
Sash-Cord Irons	30
Scratch-Awls, Handled	30
Screw-Drivers, Varnished Handles	65
Patent Improved, Black Handles	60
Screw-Drivers, No. 86	70
Spoke-Shaves, Bailey's	40
Spoke-Shave Cutters, Bailey's	40
Trammel-Points	30
" " for Rules	20
Tool-Handles and Tools, Excelsior	30
Try-Squares, No. 20	60
" " Adjustable, No. 14	30
" " Iron Handle, No. 12	30
" " Inlaid, No. 10	30
" " Plumb and Level	30
" Square and Bevel, Combination	30
Try and Miter Square, Winterbottom's	30
Veneer-Scrapers	40

The J. L. Mott Iron Works, 90 Beekman street, New York, announce advanced prices on account of the cost of Iron and other materials entering into their manu-

Manufacturers' Standard List.—Revised and Adopted December 18, 1889, to Take Effect January 1, 1890.

SQUARE AND HEXAGON HOT-PRESSED NUTS.

Square.					Hexagon.				
Short diameter.	Thickness.	Hole.	Size of Bolt.	Price per 100 pounds.	Short diameter.	Thickness.	Hole.	Size of Bolt.	Price per 100 pounds.
½	¼	7/32	¼	$13.00	½	¼	7/32	¼	$20.00
5/8	5/16	9/32	5/16	11.50	5/8	5/16	9/32	5/16	16.00
¾	⅜	11/32	⅜	10.00	¾	⅜	11/32	⅜	13.00
⅞	7/16	13/32	7/16	9.00	⅞	7/16	13/32	7/16	11.20
1	½	7/16	½	8.70	1	½	7/16	½	10.50
1⅛	9/16	½	9/16	8.50	1⅛	9/16	½	9/16	10.30
1¼	⅝	9/16	⅝	8.40	1¼	⅝	9/16	⅝	10.00
1⅜	¾	25/32	¾	8.20	1⅜	¾	25/32	¾	9.80
1¾	⅞	29/32	⅞	8.10	1⅜	⅞	29/32	⅞	9.60
2	1	⅞	1	8.10	1¾	1	⅞	1	9.60
2¼	1⅛	15/16	1⅛	8.10	2	1¼	15/16	1⅛	9.60
2½	1¼	1 1/16	1¼	8.20	2¼	1⅜	1 1/16	1¼	9.80
2¾	1⅜	1 3/16	1⅜	8.40	2½	1½	1 3/16	1⅜	10.00
3	1½	1 5/16	1½	8.60	2¾	1⅝	1 5/16	1½	10.20
3¼	1⅝	1 7/16	1⅝	8.80	3	1¾	1 7/16	1⅝	10.50
3½	1¾	1 9/16	1¾	9.00	3¼	1⅞	1 9/16	1¾	10.70
3¾	1⅞	1 11/16	1⅞	9.10	3½	2	1 11/16	1⅞	10.80
4	2	1 13/16	2	9.20	3½	2⅛	1 13/16	2	11.00
4	2⅛	1⅞	2⅛	9.40	3¾	2⅛	1⅞	2⅛	11.30
4¼	2¼	2	2¼	9.60	3¾	2¼	2	2¼	11.50
4¼	2⅜	2¼	2⅜	9.60	4	2⅜	2¼	2⅜	11.80
4½	2½	2¼	2½	9.80	4½	2½	2¼	2½	12.10
4¾	2¾	2 7/16	2¾	10.30	4½	2¾	2 7/16	2¾	12.60
5	3	2 1/16	3	10.80	4¾	3	2 1/16	3	13.20

NARROW-GAUGE SIZES.

Square.					Hexagon.				
Short diameter.	Thickness.	Hole.	Size of Bolt.	Price per 100 pounds.	Short diameter.	Thickness.	Hole.	Size of Bolt.	Price per 100 pounds.
1/32	3/16	5/32	3/16	$20.00					
5/32	7/32	7/32	¼	13.70					
9/16	9/32	9/32	5/16	12.30					
11/16	5/16	11/32	⅜	10.60					
13/16	⅜	⅜	7/16	9.60					
⅞	½	7/16	½	9.00	⅞	½	7/16	½	$11.20
1⅛	⅝	9/16	⅝	8.50	1⅛	⅝	9/16	⅝	10.30
1⅜	¾	21/32	¾	8.35	1¼	¾	21/32	¾	10.10
1⅝	⅞	25/32	⅞	8.15	1½	⅞	25/32	⅞	9.80
1¾	1	⅞	1	8.15	1⅝	1	⅞	1	9.70
2	1⅛	15/16	1⅛	8.15					
2¼	1¼	1 1/16	1¼	8.30					

factures. The following is their discount sheet, issued under date December 28, and all discounts not in accordance with it are withdrawn:

	Discount per cent.
Baths, Imperial Porcelain and Porcelain-lined, Galvanized and Painted Iron	20
Baths, Copper	25
" Needle, Shower, Wave and Spray	20
Bidets	20
Boiler Stands	40
Boilers, Range, Copper	30
" " Galvanized Iron, up to 52 gals	65&5
Boilers, Range, Galvanized Iron above 52 gals	60&10
Back-Water Valves	20
Cabinet Work for Baths, Water-Closets, Wash-Stands and Bidets	20
Cesspools	40
Charcoal Furnaces	40
Doors, Frames and Grate Bars for Brick Furnace	30
Earthenware	20
Furnaces for Melting Lead	25
Filter	20
Faucets for Sinks and Basins	20
Grease Traps and Interceptors	20
Greenhouse, Iron Pipe Fittings for	60
" Expansion-Tank	30
" Valves	30
Grating for Fresh-Air Inlet	20
Hoppers, Hopper-Traps and Hopper-Closets	20
Lavatories	20
Latrines	20
Leader-Pipes	40
Marble for Wash-Stands, Water-Closets, Urinals and Sinks	20
Pipe and Fittings, Iron Soil, 2 to 6 inches inclusive	60
Pipe and Fittings, Iron Soil, other sizes	55
Privy Sinks	20
Pressure Reducing Valve	20
Pipe-Testing Plugs	20
Pipe-Ears	20
Pipe-Hangers	20
Sinks, Kitchen, Imperial Porcelain and Yorkshire	20
Sinks, Kitchen, Iron, Plain, Galvanized and Enameled	30
Sinks, Slop, Imperial, Porcelain, Yorkshire, Hygeia, Newport, Demarest Iron and Marquis	20
Sinks, Slop, Iron, Plain, Galvanized and Enameled	30
Sinks, Slop, Hopper, Iron, Plain and Enameled	30
Sinks, Pantry, Porcelain	20
" " Copper	30
Sink Backs and Fittings	30
Sink, Sectional Wash for factories	20
Slop Safes, Porcelain, Cast and Wrought Iron	20
Stop-Cock Boxes	40
Street-Washer Boxes	40
Solder Pots and Molds	40
Steam Kettles	25
Tanks, Cast and Wrought Iron	20
Urinals, Porcelain and Iron, all kinds	20
" Fittings	20
" Flushing Cisterns for	20
Water-Closets and Water-Closet Apparatus and all pertaining thereto	20
Wash-Stands and Wash-Basins, Porcelain and Iron, and all pertaining thereto	20
Wash-Tubs, Imperial Porcelain, Yorkshire Brown Earthenware and Iron	20

Items.

A carload of Axes has recently been shipped by the Kelly Axe Mfg. Company, Louisville, Ky., to Bigelow & Dowse, Boston, Mass., their New England agents. This lot of Axes consisted of an assortment of New England, Maine and Wedge-Pattern Single-Bits, Perfect Double-Bits, Boys' Axes and Men's Handled-Axes. The car containing them was placarded liberally with a handsome poster illustrating the Axes and calling attention to the New England agency, the regular use of these posters being in connection with the sale of the goods by Bigelow & Dowse. This poster gives illustrations of the Kelly Perfect Axe, which is made under recent patents, showing it double-bitted, and in the Maine and New England patterns single-bit. It is an interesting and suggestive fact to find New England in this manner drawing on Kentucky for Axes, and at the same time it illustrates the enterprise with which the manufacturers are putting on the market this important line of goods

In their advertisement occupying page 96 Eureka Door Bell Company, Boston, Mass., refer to their line of Door Bells, giving illustration of Busby's latest and new improved Push-Button Bell Nos. 10 and 11, and also their Nos. 5 and 6 Bell. The special features of this interesting line are explained at length.

G. C. McNeil, Akron, Ohio, issues a neat and elegantly-printed circular in regard to his Balanced Charging-Barrow, of which two illustrations are given and a full description of its construction and advantages.

Cable Flax Mills, manufacturers of Twine, Yards, Threads, &c., Schaghticoke, N. Y., issue a pamphlet containing an address on American Hemp Culture,

delivered by E. A. Hartshorn, Troy, N.Y. before the Fowlers' Institute of the New York State Agricultural Society, Valley Falls, N. Y., November 29, 1889. A large amount of interesting matter on this subject is thus presented.

Henry Seymour Cutlery Company, Holyoke, Mass., for whom Wiebusch & Hilger are agents, 84 and 86 Chambers street, New York, are issuing an elegant price-list of their Shears, Scissors and Sheep-Shears, of which abundant illustrations are given, with list prices and a large variety of testimonials. The pamphlet is elegantly printed on paper of superior quality. It is accompanied by the Seymour Calendar, copyrighted by R. H. Seymour, in which a novel arrangement is followed.

The Automatic Coin Operated Door Lock Company, 93 and 95 Broadway, New York, issue a circular describing their Lock, the special feature of which is that the door to which it is attached can be opened only by means of a coin inserted in the Lock.

Francis T. Witte Hardware Company, 106 Chambers street, New York, have issued a new catalogue, in which nearly 500 pages are devoted to the exhibit of their large and varied line. It is an exceedingly convenient volume and a model of compactness and clearness. The cuts are all of moderate size, thus permitting the exhibit of the goods in the smallest space. The lists have been adjusted so that only a few different discounts cover the entire lines. Special care has been taken in the arrangement of the lists to present them in such a way as to secure compactness and convenience of reference, as, for example, the lists of kindred goods are tabulated in parallel columns, so as to facilitate reference and give a ready conception of comparative values. The volume is accompanied by a disconnt-sheet which contains also a table for reducing goods subject to 40 and 10 per cent. discount—a discount which is often used—to net cost, and also to selling prices at six different rates of profit. The book has also an excellent index to facilitate reference to the large amount of information which it contains.

E. C. Atkins & Co., Indianapolis, Ind., illustrate in their catalogue their large and increasing line of goods, in the display of which 136 pages are occupied. Their well-known line of Saws, Saw Tools and related goods and machinery are thus conveniently presented.

The White Mountain Freezer Company, Nashua, N. H., for whom W. H. Quinn & Co., 99 Chambers street, New York, are agents, publish a desirable collection of recipes for all kinds of ice-cream, sherbets, water-ices, &c., under the title "Frozen Dainties," a copy of which is packed with every Freezer sent out from their factory. The book may also be obtained with printed matter relating to the company's manufactures, terms, &c., upon application to the factory or any of their branch offices, which are 115 Broad street, Boston, Mass.; 99 Chambers street, New York; 905 Market street, Philadelphia, and 14 West German street, Baltimore, Md. The trade also will observe with interest that the company have added a new Freezer called the Granite State to their already extensive line, a description of it being given on page 36.

Winchester Repeating Arms Company, New Haven, Conn., and New York, have issued a calendar in their usual striking and effective style. It represents a variety of hunting scenes, in which attention is called to their Arms and Ammunition. The calendar proper is clearly printed.

In their advertisement on page 80 Goodell Company, Antrim, N. H., for whom Alford & Berkele Company, 77 Chambers street, New York, are agents, call attention to their line of Goodell Cutlery, referring to the pains taken in its manufacture, especially in the use of the best material combined with skilled workmanship, and also to their facilities for turning out their large and favorably known line of goods.

The Bronson Supply Company, manufacturers of Never-Break Steel Hollow-Ware, Cleveland, Ohio, and 51 Cliff street, New York, are issuing a striking colored lithograph in which the merits of their Never-Break Ware are pictorially emphasized.

In their advertisement on page 67 Scheeler & Sons, Buffalo, N. Y., call attention to their Wire Cloth, Hexagon Netting, Bank and Office Railing, Window-Guards, &c.

It will be observed that in the advertisement on page 87 John Hosford, Monroeville, Ohio, for whom the Kansas City Hardware Company, Kansas City, Mo., are agents, illustrates his American Screen Wire Holder, an article which we understand has been received by the trade with much satisfaction, and seems admirably adapted to the purposes for which it is intended.

The Lefever Arms Company, Syracuse, N. Y., in their advertisement on page 93 illustrate their Gun, mentioning some of the principal points which are made in regard to it, and calling attention specially to the fact that it is the only Gun with compensated action to take up the wear in every direction.

E. C. Stearns & Co., of Syracuse, N. Y., direct attention by means of the matter on one of the colored leaves which form a feature of this issue to seasonable goods, among which may be mentioned Stewart's Window-Screen Frame, the Gem Window-Screen Frame and Corners, Stearns' Spring-Hinges and the Perfect Screen Door Check. Various particulars concerning these goods are tersely presented in connection with cuts on the colored leaf referred to.

The Union Metallic Cartridge Company, with factory at Bridgeport Conn., and agencies in New York and San Francisco, have issued a very striking calendar for the new year. The largest sheet, which is in the form of a poster, has metal edges and is printed in colors. The upper half is devoted to a spirited reproduction of the painting by Eugene Girardet, entitled "The French in Algeria." While undoubtedly appropriate in the advertising of ammunition, the thought suggests itself that the scene of carnage is so terrible as perhaps to check rather than stimulate the demand for cartridges. However, the mind is relieved of this thought by gazing upon the two side panels which flank the monthly sheets, representing as they do domestic game which it is the highest pleasure of many hunters to pursue. The monthly sheets are of generous size, and are printed in black, with indications of the several holidays of the year in red. On the back of each monthly sheet is a complete calendar for 1890, a convenience that will be appreciated, while the space over which they hang is a complete calendar for 1891. The coloring of this calendar, together with the convenience of the sheets, should assure its preservation on the walls of every office against which it is hung.

S. L. Campbell has opened an office at 105 North Third street, St. Louis, Mo. Mr. Campbell is a commission merchant and represents several leading Hardware concerns in that city and vicinity. We understand he is open for negotiation with those desiring representation in St. Louis.

The Charles Parker Company, of Meriden, Conn., have sold their interest in the Parker Sash-Lock to Hobart B. Ives &

Manufacturers' Standard Lists.—Revised and adopted December 17, 1889, to take effect January 1, 1890.

MACHINE BOLTS WITH SQUARE HEADS AND NUTS. FINISHED POINTS.

PRICE PER HUNDRED.

	1-4	5-16	3-8	7-16	1-2	9-16 & 5-8	3-4	7-8	1
1½	2.80	3.20	3.60	4.60	6.00	9.00	12.70	18.80	27.50
2	2.90	3.35	3.80	4.90	6.35	9.55	13.45	19.80	28.80
2½	3.00	3.50	4.00	5.20	6.70	10.10	14.20	20.80	30.10
3	3.10	3.65	4.20	5.50	7.05	10.65	14.95	21.80	31.40
3½	3.20	3.80	4.40	5.80	7.40	11.20	15.70	22.80	32.70
4	3.30	3.95	4.60	6.10	7.75	11.75	16.45	23.80	34.00
4½	3.40	4.10	4.80	6.40	8.10	12.30	17.20	24.80	35.30
5	3.50	4.25	5.00	6.70	8.45	12.85	17.95	25.80	36.60
5½	3.60	4.40	5.20	7.00	8.80	13.40	18.70	26.80	37.90
6	3.70	4.55	5.40	7.30	9 15	13.95	19.45	27.80	39.20
6½	3.80	4.70	5.60	7.60	9.50	14.50	20.20	28.80	40.50
7	3.90	4.85	5.80	7.90	9.85	15.05	20.95	29.80	41.80
7½	4.00	5.00	6.00	8.20	10.20	15.60	21.70	30.80	43.10
8	4.10	5.15	6.20	8 50	10 60	16.20	22.50	31.80	44.40
9	.....	.....	6.60	9.10	11.30	17.30	24.00	33.80	47.00
10	.....	.....	7.00	9.70	12.00	18.40	25.50	35.80	49.60
11	.....	.....	7.40	10.30	12.70	19.50	27.00	37.80	52.20
12	.....	.....	7.80	10.90	13.40	20.60	28.50	39.80	54.80
13	.....	.....	.....	.....	14.10	21.70	30.00	41.80	57.40
14	.....	.....	.....	.....	14.80	22.80	31.50	43.80	60.00
15	.....	.....	.....	.....	15.50	23.90	33.00	45.80	62.60
16	.....	.....	.....	.....	16.20	25.00	34.50	47.80	65.20
17	.....	.....	.....	.....	16.90	26.10	36.00	49.80	67.80
18	.....	.....	.....	.....	17.60	27.20	37.50	51.80	70.40
19	.....	.....	.....	.....	18.30	28.30	39.00	53.80	73.00
2	.....	.....	.....	.....	19.00	29 40	40.50	55.80	75.60

Bolts with Hexagon Heads or Hexagon Nuts, 10 per cent. extra.
If both Hexagon Heads and Hexagon Nuts, 20 per cent. extra.

LAG-SCREWS AND SKEIN-SCREWS WITH SQUARE HEADS.

PRICE PER HUNDRED.

	5-16	3-8	7-16	1-2	9-16 & 5-8	3-4	7-8	1
1½	2.70	3.10	4.00	4.30	.....	.....	.....	.....
2	2.90	3.30	4.25	4.65	6.50	.....	.....	.....
2½	3.10	3.50	4.50	5.00	7.05	10.20	.....	.....
3	3.30	3.70	4.75	5.35	7.60	10.95	16.00	.....
3½	3.50	3.90	5.00	5.70	8.15	11.70	17.00	22.60
4	3.70	4.10	5.25	6.05	8.70	12.45	18.00	24.00
4½	3.90	4.30	5.50	6.40	9.25	13.20	19.00	25.40
5	4.10	4.50	5.75	6.75	9.80	13.95	20.00	26.80
5½	4.30	4.70	6.00	7.10	10 35	14.70	21.00	28.20
6	4.50	4.90	6.25	7.50	10.90	15.50	22.00	29.60
7	.....	.....	6.75	8.20	12.00	17.00	24.00	32.40
8	.....	.....	7.25	8.90	13.10	18.50	26.00	35.20
9	.....	.....	7.75	9.60	14.20	20.00	28.00	38.00
10	.....	.....	.....	10.30	15.30	21.50	30.00	40.80
11	.....	.....	.....	11.00	16.40	23.00	32.00	43.60
12	.....	.....	.....	11.70	17.50	24.50	34.00	46.40

FORGED SET-SCREWS AND TAP-BOLTS.

PRICE PER HUNDRED.

	1-4	5-16	3-8	7-16	1-2	9-16 & 5-8	3-4	7-8	1
1½	2.50	2.80	3.30	3.90	4.90	7.40	10.40	15.00	23.20
1¾	2.60	2.90	3.40	4.00	5.10	7.70	10.80	15.50	23.90
2	2.70	3.00	3.50	4.10	5.30	8.00	11.20	16.00	24.60
2¼	2.80	3.10	3.60	4.20	5.50	8.30	11.60	16.50	25.30
2½	2.90	3.20	3.70	4.30	5.70	8.60	12.00	17.00	26.00
2¾	3.00	3.30	3.80	4.40	5.90	8.90	12.40	17.50	26.70
3	3.10	3.40	3.90	4.50	6.10	9.20	12.80	18.00	27.40
3½	.....	.....	4.10	4.70	6.50	9.80	13.60	19.00	28.80
4	.....	.....	.....	4.90	6.90	10.40	14.40	20.00	30.20

If with Hexagon Heads, 10 per cent. extra.

BOLT ENDS WITH SQUARE NUTS.

PRICE PER POUND.

Size of Iron	5-16	3-8	7-16	1-2	5-8	3-4	7-8	1	1 1-8
Length	6	7	7	8	9	10	11	12	13
Price per lb	28	24	22	18	16	14	14	14	14

Size of Iron	1 1-4	1 3-8	1 1-2	1 5-8	1 3-4	1 7-8	2
Length	14	15	16	17	18	19	20
Price per lb	16	16	16	18	18	18	18

Co., of New Haven, Conn., by whom the trade will hereafter be supplied. The latter company manufacture the well-known Ives' Patent Sash-Locks and Mortise Door-Bolts under some nine patents, which are owned only by them. They inform us that their business has increased at a remarkably rapid rate—for example, more than one-third during the past six months, making them one of the largest establishments in this country in their line of specialties.

The National Pulley-Covering Company, of Baltimore, Md., will issue very soon a new price-list, of which notice will appear hereafter, much simplifying the sale of their goods. They report that their business during November came from 17 widely-separated States, including some remarkably large Coverings from Louisiana, Western Pennsylvania, Ohio and Michigan.

We are requested to state that the firm of Gilbert, Sweet & Lyon, 33 Chambers street, New York, in liquidation, will continue the sale of such goods as they have remaining in stock until about February 1. They invite the attention of buyers and will make specially low prices.

The Putnam Horse Nail Company, beginning January 1, make their discount on quantities of 1000 pounds during the year 10 per cent., with 1 per cent. for cash within ten days.

Trade.

We have the following advices from Louisville in regard to the condition of the Hardware trade in that market, which will be of interest:

The Hardware trade may be characterized as good. Considering the season of the year, business is remarkable, and it looks now as if the good times will last over the holidays and run into the spring trade. Manufacturers generally are very firm, evidently realizing that they can make some money by showing a bold front, even where they have plenty of material bought at low prices; some, though, are forced up as material keeps climbing upward. Dealers have looked in vain so far for the customary weakness in the markets about January 1, and are studying closely the causes of present stiffness and independence with a view to future purchases. Bar-Iron remains firm from mill and store, neither needing to offer any inducements to sell. Sheets are steady at $3.50 from store. Cut Nails have moved up 10 cents, making $2.35, net, at mills, 2 per cent. for cash, and if Steel continues to advance another step up in price of Nails will result. Mills are quoted only for immediate shipments, refusing to make long-time contracts, as they eagerly do about this time every year. A healthy trade is looked for from now on. Wire Nails are firm at full prices, but some of the strain is relieved by the mills catching up with contracts. Trade in them continues large. Barb-Wire is also quiet from factories, but all inquiries are met by full quotations. The mildness of the winter causes more than the usual amount of Wire to be used at this season of the year, giving a good trade from store. The Stove trade this fall has been heavier than ever before, but it looks now as if there may be some trouble caused by the light winter, not only in heating stoves, but seasonable goods generally remaining in stocks of country merchants. There are some complaints from short cotton crops in the Memphis district delaying collections, but generally the crops were good, and where merchants have not over-bought themselves prospects for prosperity are good.

Reports from England indicate a continuance of the strength of prices which has characterized the market for some time, and advances in many lines are still being announced. There is also a heavy demand for goods, the export trade being especially active. The Continent of Europe continues to absorb large quantities of Edge-Tools of the best brands, and the recent advances have done apparently nothing to diminish the demand.

From the circular accompanying the calendar which Bruce & Cook, New York, are in the habit of sending out to their customers, we extract the following concise review of the Metal trade for the year which has just closed:

The year that has just closed has seen a very low range of prices on all kinds of Metals. During the summer months the prices of Iron and Steel in England gradually hardened in price, owing to the large demand upon the producers for materials for ship-building, Steel Rails, Tin-Plates and other industries. Its effect was scarcely felt here until about September 1, when higher prices began to rule in all articles having Iron and Steel for a basis. While the English market has advanced about 50 % on Iron and 60 % on Steel, with a reaction of about 15 % in early December, most of which has again been recovered, Tin-Plates have only advanced 10 to 15 %. In view of this, a break must take place in the prices of Iron and Steel, which does not seem probable at the moment, or we must have much higher prices for Tin-Plates. A large production may keep this somewhat in check, but cannot altogether control it. We think caution during the next few months, at least, in taking contracts without having the stock in hand is desirable.

Copper, which was at a very high figure a year ago, collapsed during the early part of the year, and a price was reached somewhat below a normal figure, as is usual in such cases. A material advance of about 30 % from the lowest price of the year has been realized and is well maintained.

Pig Tin, Lead and Spelter—the latter firm—seem to be ruling at about fair prices, but may be expected to sympathize somewhat with Iron and Steel, should these articles be taken hold of by speculators, which has not been largely the case up to the present time, but it is an element which must not be omitted if any unusual stir takes place in the market.

All indications point to a busy season in almost every industry. We trust that you may get your full share and that we may enjoy it together.

Cash Discount on Delivered Goods.

The following question, which will be recognized as substantially the same as one which has recently been discussed in these columns, has been submitted with a view to ascertaining the correct rule of action in the premises. Our correspondents say:

We buy Barbed Wire, Nails, Road-Scrapers, &c., at delivered prices, terms, 60 or 90 days, 2 or 3 per cent. off for cash in 10 days. The point we desire settled is: Are we entitled to the discount off from the face of the invoice, then deduct freight which we pay in cash and remit the balance; or, should we deduct freight first and then discount from the balance only?

Yale & Towne Mfg. Company's New York House.

As manufacturers of a leading line of Locks, Door Furniture, Differential Pulley-Blocks, Overhead Tram-Rails, Cranes, &c., the Yale & Towne Mfg. Company, Stamford, Conn., have been for a long time prominently before the trade and in several different lines have occupied a leading position. They have of late been adding largely to their assortment of Locks and Door Furniture, and have been especially enterprising and successful in putting on the market artistic patterns in order to meet the increased demand for the best goods, a demand which they have done not a little to stimulate. With the growing importance of their business they have recognized the necessity of having more adequate accommodations in this city, and they have accordingly fitted up in an exceptionally attractive style their large double store, 84 and 86 Chambers street. The accompanying illustrations represent some of the appointments of this very attractive store, Fig. 413 showing its general arrangement, with the location of office, shelving, counters, exhibit-room, &c., of which more detailed illustrations are given in the engravings herewith presented.

Fig. 414 represents the private office of Thomas F. Keating, manager of the New York house and assistant treasurer of the company. The location of the office, which is inclosed in glass, is indicated on the general plan, and one of the features worthy of special notice is that from the manager's desk a complete view is obtained of every part of the store, so that every parson in it is in sight. Fig. 415 shows the catalogue-case, in which a full line of price-lists and other trade literature is contained, the top of this case being used for mounted samples. It will be observed that in the upper part of this case are shelves which can be drawn out for receiving the catalogue which is to be consulted or samples that it may be desired thus to examine. The mantel is used for an exhibit of the Combination Bank and Safe Locks and Time Locks, while on either side of it are bronze medals granted at the Paris Exhibition of 1867. Several diplomas from international exhibitions occupy different portions of the wall. The long-distance telephone shown in the illustration is an important adjunct to the store and is found exceedingly useful in communicating with the works at Stamford, 34 miles distant, saving much correspondence and the delay involved in telegraphing, as customers are enabled to obtain immediate advices in regard to goods and to have their orders which require attention at the factory transmitted without loss of time. It is not an infrequent thing for some of the company's Hardware or Machinery to be required immediately, and by means of this telephonic communication the goods, if at the factory, can be obtained without delay. The floor of this office, as other parts of the store, is finished in hard-wood and a pleasant effect is produced by a handsome antique rug. The light is also exceptionally good, the whole rear of the store being lighted by a sky-light and the arrangement of the wood-work through the store being such as to make it as light as possible. In order to secure this the wood-work, including counters, solid partitions, &c., is not permitted to be higher than the light-line of the front.

As will be seen from the general plan, Fig. 413, the stenographer's, book-keeper's and entry-clerk's room adjoins the manager's office, from which it is separated by a glass partition. In the opposite corner is the workshop, shown in Fig. 416, which is an exceedingly useful adjunct to the store. In it there are two machines, one used for cutting corrugated keys and another for plain keys, the shop having facilities for setting-up locks, fitting master-key work, and doing all sorts of general repair work. The small boxes shown on the right contain the necessary parts of Locks for doing such work. On the same side of the store, running from the workshop to the elevator near the front, is a counter of the style shown in Fig. 417, with shelving and drawers behind it. This counter, it will be observed, is made open beneath, a construction which prevents such accumulation of goods as is often found in counters of the ordinary construction, while at the same time it gives a light and attractive appearance to the store. The stock is kept in the open shelves behind the counter, the drawers below being partitioned off for samples of the goods kept above. In the arrangement of these sample drawers partitions are made of appropriate size for each Lock, which is thus kept separately. These samples are kept fresh and clean and to this end are sold or changed as often as may be desirable. In the lower drawer Locks in sets alike are kept.

The most prominent and novel feature in the store is the large exhibit or sales room, which occupies a central position, as indicated in Fig. 413. This room is 17 feet 7 inches by 39 feet, and is separated on all sides by a glass partition from the rest of the store. The wood-work is quartered oak, natural finish, and of the light and tasty design shown in Fig. 418. This illustration shows only one corner of the room, but indicates very satisfactorily its arrangement and shows its appearance as one looks toward the rear. In this room there are three tables intended for use in showing samples and selling goods. On the polished floor are five elegant antique rugs, which, with the handsome furniture, produce a pleasant and attractive effect. The arrangement of the sample-drawers deserves special attention. These sample-drawers are 110 in number and are of the

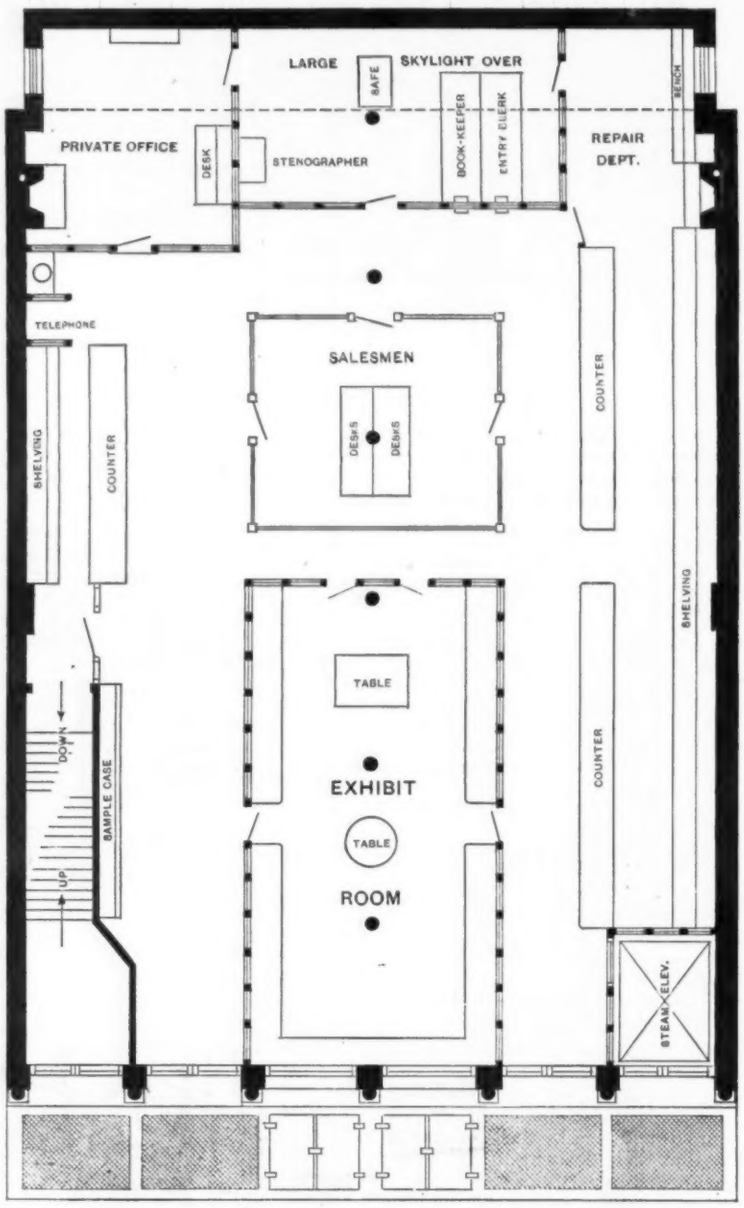


Fig. 413.—Diagram of Yale & Towne Mfg. Company's New York House.

construction indicated in the illustration and also in Fig. 419, in which one of them is separately shown. They are 22 inches deep, 24 inches wide and the face 5½ x 24 inches. It will be perceived that the arrangement of these drawers is such that they can be taken out and placed on end on the counter or a table, permitting a convenient examination of the samples shown. Another most admirable feature is that the wood of the various drawers to which the samples are attached is different, representing nearly every variety of the woods in use. The samples are carefully selected to harmonize or contrast with the color of the wood to which they are attached, and great assistance is thus given to purchasers in selecting the style

and finish of metal-work which is desirable in connection with the kind of wood with which it is to be used.

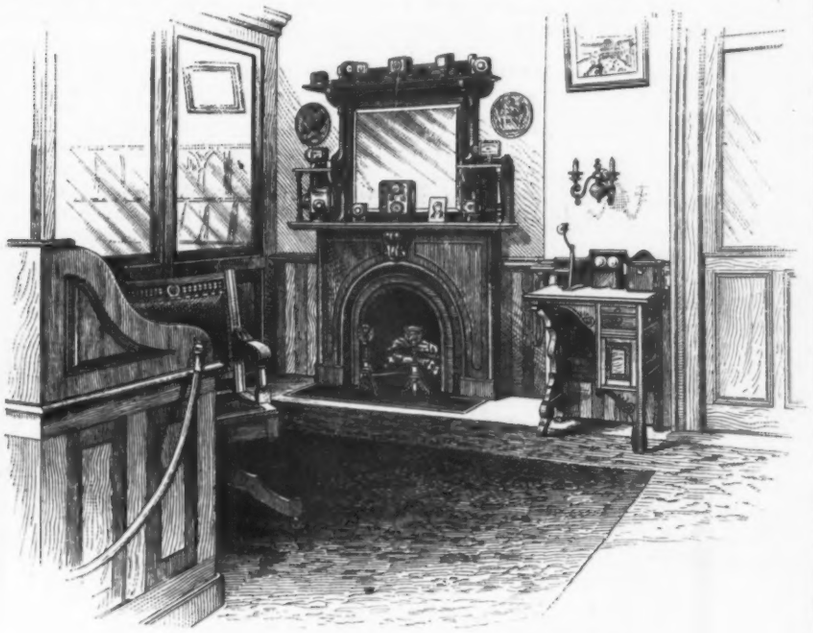


Fig. 414.—Office of Thomas F. Keating, Manager.

It is not often that an opportunity is given to observe under such favorable circumstances the characteristics of the various handsome woods which are thus shown, including as this arrangement does drawers of the following kinds of wood, with varied and appropriate Lock furniture and artistic metal-work attached:

Ash,	Whitewood,
White oak,	Coco bolo,
Antique oak,	Whiteenamel,
Black oak,	Satin-wood,
Walnut,	Sycamore,
Bird's-eye maple,	Hazel,
Maple,	Stained hazel,
Natural cherry,	Ebony,
Stained cherry,	California redwood,
Mahogany,	Chestnut,
White mahogany,	Butternut,
Antique mahogany,	North Carolina pine.
Figured mahogany,	

It is also interesting to study the variety of design and decoration which the taste and experience of the company suggest as most suitable for the different woods, as for example on mahogany Lock furniture of light oxidized silver and of Romanesque, French or Italian *Renaissance* patterns, most of which are characterized by much delicacy and richness of effect, is used, the oxidized silver making a pleasing contrast with the color of the wood. On wood finished in white enamel and gold designs in French or Italian *Renaissance*, hand-chased and gold-plated, are used; on black walnut, plain bronze, in a variety of designs; on natural cherry, polished yellow brass, and on antique quartered oak, ash and other light woods, such as are frequently used in dining-rooms and halls, wrought and cast iron work in a variety of designs beautifully finished and made rustless by the Bower-Barff process.

But these are only a few of the many attractive combinations which are exhibited, and as each kind of wood is shown with metal-work of a variety of designs and finishes, it will readily be understood that purchasers are given the best opportunity of making judicious selection. The sample-room contains also a handsome cabinet in which are contained samples showing at a glance a large variety of special oxidized finishes, many of which are delicate and attractive. The utility and convenience of this exhibit-room will be appreciated by the company's general customers, and especially by the trade, it being intended that it shall be used by dealers to bring their customers to it, thus giving them an opportunity to make direct selection of their Hardware, facilities being provided by which the requisite information shall be in their possession without the presence of a salesman, and the room being separated from the rest of the store so as to give them all desirable seclusion.

Immediately in the rear of the exhibit-room is the arrangement of desks shown in Fig. 420, from which it will be observed that inside an inclosure four desks are grouped around a pillar. These desks are so built that the divisions on the top may be removed to form practically one large table, which is found very useful for laying out architects' plans for the purpose of making out from them a list of the Hardware for which they call. These desks are regularly used by the salesmen and are connected by electric bells, as are all other parts of the store, with the manager's office.

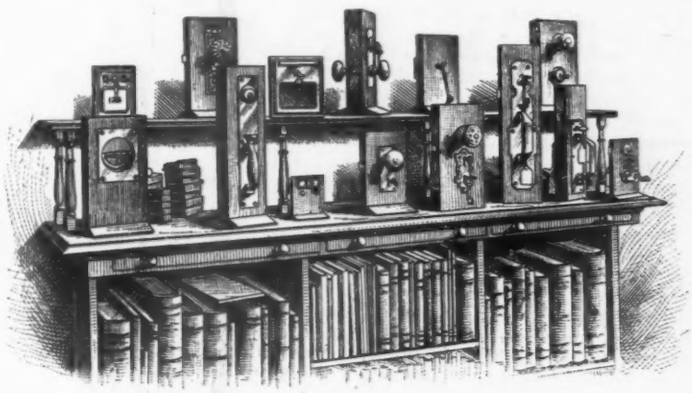


Fig. 415.—Catalogue and Sample Case.

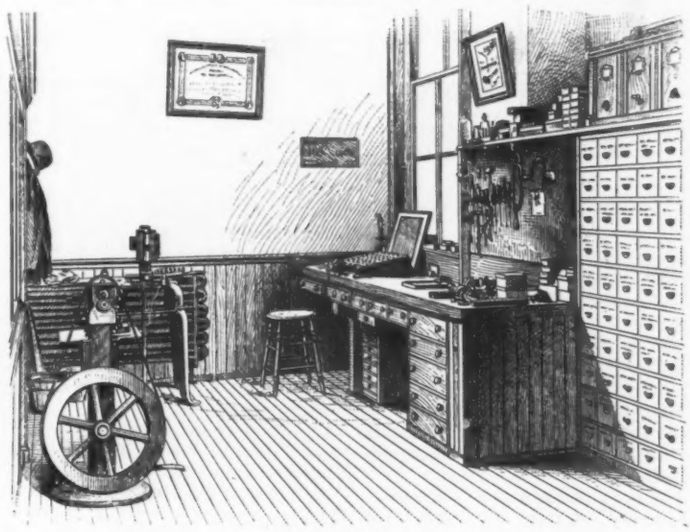


Fig. 416.—Workshop.

Below the store, in a commodious and attractive basement, samples are kept of the heavier manufactures of the company, goods are stored, packing done and other useful purposes subserved. A large wooden frame-work contains models of their light Traveling-Cranes, Overhead-Tramrails with trolleys, Double-Lift Hoists, Pulley-Blocks, &c. On this floor the stock of goods in whole cases is kept, and also in shelving on one side a supplementary stock of other goods. Here also are kept the samples of Post-Office Fixtures. A very neat arrangement is in use for the accommodation of wood-cuts, which are contained in two specially constructed cases, which accommodate the large number of original wood-cuts and electrotypes in use by the company. The manager has devised a very satisfactory arrangement of indexing these, so that the original wood-cut or the electrotype can at once be found. The fact that the company have now in use 3818 wood-cuts indicates the necessity for some system, and the one in use, carried out as it is accurately and consistently, has been found to serve the purpose perfectly.

This floor is also used for packing goods, a steam elevator being found useful in getting the goods up and down. As the goods are selected from the stock in the store they are placed on a truck which

is taken by means of the elevator to the packing-room, where is another large truck containing packing materials, into which, as soon as the packing is done, all loose and scattered material is gathered from the floor, thus securing a degree of neatness not often found in a shipping department.

From this description it will be seen that this store is exceptionally attractive and well uppointed and in harmony with the company's policy, which aims at the introduction of a high and artistic class of Hardware by which the trade can meet every demand for metal-work such as is now called for in the trimming of every kind of building. Progress in this direction, which is noticeable in the manufacture of Hardware generally, is a matter of congratulation and is due not a little to the efforts of this company.

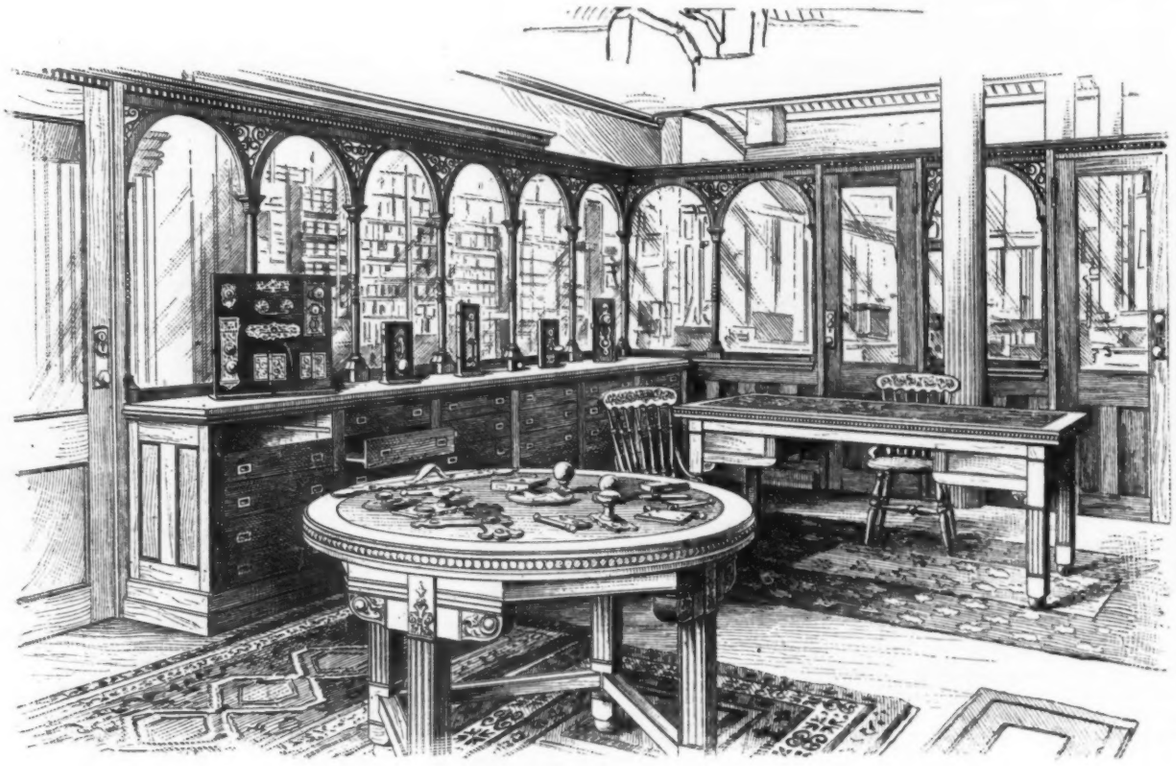


Fig 418.—Exhibit or Sales Room.

Commercial Travelers.

(Concluded.)

POINTS FROM MEN ON THE ROAD.

In June last a large pottery and glassware jobbing house in Chicago sent a circular-letter to each of its commercial travelers and offered a prize for the reply which should be deemed best by the majority, the writers remaining unknown to all but the firm, except by number. The following is the substance of the circular:

"*Dear Sir:* Believing that every salesman has acquired, in his experience on the road, certain facts and methods which have proved most successful in selling goods, and realizing that, as no two men's experience can be the same, we think if the combined experiences of all can be brought forward for the benefit of all that the experiment would lead to decidedly practical ends. Every successful salesman on the road has some strong points peculiar to himself, and it would seem as if something new could be found in the experience of 20 men. In the majority of cases the costly experience of years dies with its possessor.

"We therefore ask your co-operation in the plan of writing an article on the following points, &c.:

"*First.*—What constitutes a successful salesman on the road?

"*Second.*—What qualities do you deem most essential to become such?

"Respectfully, &c."

A few extracts from replies to the above letter are given below:

"The successful salesman is the man that knows how to talk, what to talk about and more especially when to stop talking."

"The faculty of holding trade or selling repeatedly to the same people is the highest attribute in the condition of a successful salesman."

"A man who is honest in his transactions with his customers, who can make

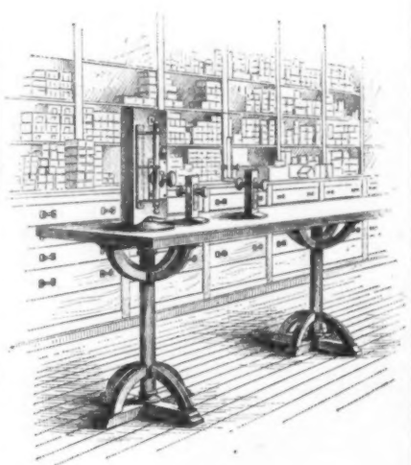


Fig. 417.—Counter and Shelving.

plain to them, in the fewest words, the superior quality of his wares, keeping himself thoroughly posted in the line he represents."

"Modest in demeanor, neat in appearance, energetic, truthful and reliable; of temperate habits; not argumentative; a student of human nature."

"The power of entertaining men in a business way and getting them interested in what you have to sell."

"A salesman is the firm's representative, and should therefore be a gentleman."

"Every man has some article which is his favorite hobby. Get on to that and cater to it for a starter, and lead him on to other goods."

"When an intemperate man is found traveling as a salesman, his class of trade is of the poorest, and his prosperity is in correspondence with his personal condition."

"The country merchant is a conundrum. If you guess him right at first meeting you will miss him the next time. Never try to 'stuff' him with an order or attempt familiarity with him."

"Do not present too many various samples at once; it confuses the buyer. A book agent does better with one book than with many."

"Refrain from any but business talk with busy men."

"A common fault is that salesmen, as a rule, give merchants credit for knowing a great deal more about goods than they really do."

"Tell him it costs no more for rent, light, clerk hire, &c., to carry a full line of goods, and as he is also spending his own time he may as well have the increased profits. A man can't sell goods if he don't have them."

"The practice of using 'leaders' has several objections. One of the chief is that it gets the same article into too many stores and tends to make dealers cut prices among themselves. It is better to look over the stock, see what is short, and make some article a leader or nucleus for other sales."

"Do not forget the connecting links; that is, when one article is ordered, bring to notice such other articles as will match or complement it."

"Never speak of a competitor in any way. Get the good-will of the clerks, for they can help you."

"When trade is brisk, push all the harder."

"Never abuse competing firms. Leave slow buyers till the last in a town, and let them know the limits of your time."

"If a merchant tells you he can buy any article below your price, do not argue with

him; try something else. Don't ask if he is in need of any goods, for he will generally tell you he is 'full up.' The better way is to carry some small article and introduce yourself with that before you are told that nothing is wanted."

"Nothing is gained by traveling nights, and the same is true of working Sundays."

The opinion of at least one successful commercial traveler (in another line) differs entirely from those given in the last paragraph. He says: "To succeed nowadays as a traveling salesman a man must sell days and travel nights whenever he can save time by it. He must not expect to have things easy, for he can't do it and

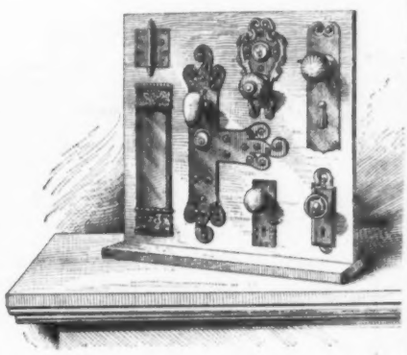


Fig. 419.—Sample Drawer.

win. He must score every point he can, and work like blazes. He is no pleasure tourist, and selling goods on the road is not a picnic."

OTHER DEBTS THAN MONEY.

No doubt the patience of a merchant who is persistently pestered for orders by a file of commercial travelers may often be sorely tried, no matter how courteous they may be. But there are, however, debts and obligations besides those of money, and one of them is politeness. The salesman is entitled to kind and polite treatment if he conducts himself like a gentleman, and it is true that where people are intelligent and well bred he receives more and more consideration and courtesy. Yet there are still too many merchants who very manifestly feel their importance when in their own counting-room, and reserve their best manners for other places. They often resemble sea-captains, who are stern, reserved and testy on the quarter-deck of their own vessels, but may be the most social and affable of men when ashore. Beyond question it will be advantageous to the retail merchant to keep on good terms with traveling salesmen, and through them maintain relations of confidence and friendship with the wholesale houses he buys of.

Guarantee of Prices.

QUESTION.—Wholesale agent A. ordered in May, 1889, of manufacturer B. 100 cases of goods at 50 per cent. discount, order reading "Quantity to be taken by December 31, price guaranteed against yourselves to date of shipment." During the summer the price of these goods declined to 60 off, and remained at this price until about November 1, at which time B.'s best price was 50 and 5 per cent. discount, that being the price prevailing to-day. A. now wants the goods shipped, and claims they should be billed at 60 per cent. B. claims that they should be billed at 50 and 5. Which of the two parties to the transaction is right?

In addition to the answers given this question in our last issue we have received the following from a well-known Pennsylvania house, in which it will be observed that the position is taken that the goods are to be invoiced at the price ruling at the date of shipment:

If A orders in May of manufacturer B 100 cases of goods at 50 per cent. off and order reads prices guaranteed against yourself to date of shipment, and if they decline to 60 per cent. off in the summer and A orders any to be shipped in that time he is entitled to 60 per cent. off, but if A did not make arrangement to have the original order changed to 60 per cent. off with the same guarantee and they advance November 1 to 50 and 5 per cent. off, B is entitled to invoice the balance due at 50 and 5 off, which is his best price at date of shipment.

Referring to this question one of our correspondents advises us that in speaking in regard to it the representative of a large manufacturing concern sided strongly with B, mainly on the ground that A did not take the goods when they were at 60 per cent. discount, and was only entitled to the price ruling at the time of shipment, not exceeding discount 50 per cent. He admitted at the same time that nine out of ten manufacturers would allow the 60 per cent. discount if claimed by A for policy's sake. It might be pointed out, however, that the order did not refer to the price *at* time of shipment, but that the guarantee was against the manufacturers *to* the time of shipment.

From a prominent house in Connecticut we have the following interesting communication, in which the matter is discussed at some length and a different conclusion reached:

We have read with interest your article in your issue of December 19 headed "Guarantee of Prices," in which A orders in May a certain line of goods of B at 50 per cent. discount, and stipulates that "quantity be taken by December 31, price guaranteed against yourselves to date of shipment," during which period B's discount goes down to 60 per cent., and afterward reacting to 50 and 5 per cent. remains so to end of period, at which time (December 31), A not having drawn any or but a small portion of the goods, the question arises as to the proper discount to charge A for balance of goods due him on December 31.

Permit us to express our opinion that we believe A entitled to the 60 per cent. discount on all goods undrawn at date of change. In other words, we think him entitled to the lowest discount prevailing at any time during the period on all goods undrawn at date of change, even though he does not draw a dollar's worth before December 31. A's object in buying early was evidently to secure the low discount of 50 per cent., and in asking for the guarantee desired to protect himself from being handicapped by his competitors, who might later on be able to buy at a lower price.

The manufacturer in soliciting for orders so far in advance of customers' wants knew it was a necessary stipulation and one that he must assume, and that if he did not some other manufacturer would. B by guaranteeing against himself was bound to give A the lowest price made by him during the period on all goods not shipped. There was no condition whatever in the agreement that A should take any of the order before the end of the period, and therefore that question has nothing to do with the price. In order to secure the 60 per cent. discount was it necessary for A, as soon as he heard of the drop, to write B and tell him to change the price from 50 per cent. to 60 per cent., and if he did could B demur and say no unless he took the goods then? Of course not, when the agreement allowed him to take them when he pleased within the period. If B refused, what reason had he for doing so? Is it necessary for A to watch B and his prices in order to insure B's fulfilling the contract honestly? Rather; B being a man of integrity is bound by the agreement to look after A's interests, as A practically withdraws from the market and places himself in B's hands. If B did not guarantee against all declines what good was it? It was not against any advance, for the 50 per cent. limit settled that question.

Again, suppose A began by ordering forward 10 dozen each month, would he not get without question the decline of 60 per cent., say in August, and having got it, how could any advance be made on him later on, if any occurred? We think the manufacturer would not have raised the question. It is a case of "Heads I win, tails you lose" for A. If the price drops, B loses; if it advances, A gains. It is the unexpected that always turns up to make trouble, and buyers cannot be too particular in plainly stating what they want.

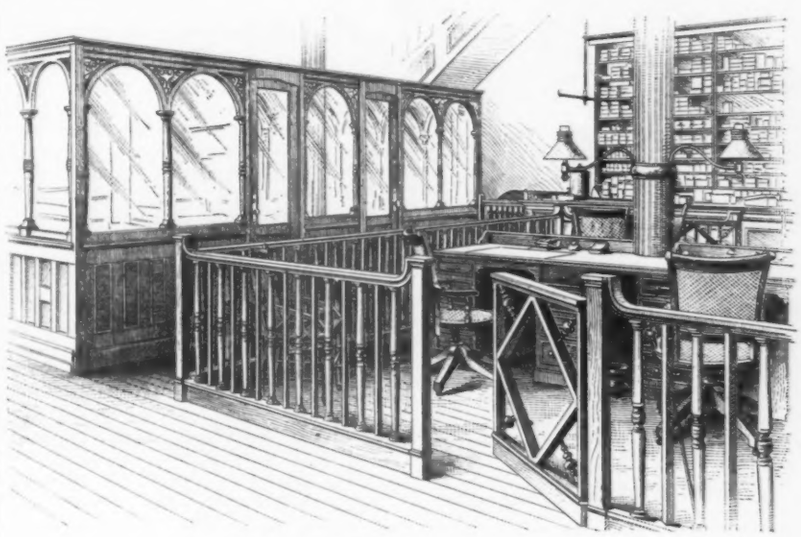


Fig. 420.—Salesmen's Desks.

T. L. Casey, 115 Dearborn street, Chicago, sole agent for the Riverside Iron Works, of Wheeling, W. Va., received an order last week for 600,000 feet of steel gas-pipe from the Chicago gas companies. This pipe received the preference at an advance of 10 per cent. over wrought-iron pipe. Last year 700,000 feet was used, but this will probably be considerably exceeded the coming year.

The Granite State Freezer.

The White Mountain Freezer Company, Nashua, N. H., for whom W. H. Quinn & Co., 99 Chambers street, New York, are

Fig. 1.—Granite State Freezer, Closed.

agents, are putting on the market a new freezer, herewith represented. It is designated as the Double-Action Granite State Ice-Cream Freezer. In addition to the

Fig. 2.—Granile State Freezer, Open.

fact that this freezer is a double-action machine, the manufacturers also describe it as having a full-size strong tub with galvanized-iron hoops, a can of heavy charcoal tin-plate and detachable hinge top, a construction which has obvious advantages Great stress is laid upon the fact that the beater is of tinned malleable iron, with self-adjusting wood scraper, so that all metal surfaces that the cream comes in contact with are tinned instead of being galvanized, thus avoiding the danger of zinc-poisoning. In this respect it will be observed that this freezer is the same as the White Mountain, in which there is also a malleable-iron beater plated with tin. The construction is also such that the can can be revolved after the beater is removed, which is referred to as an advantage in freezing fruit only. This freezer will be made during the coming season in five sizes—2, 3, 4, 6 and 8 quarts. The trade will recognize this as an interesting addition to the large line of freezers made by this company. The Arctic freezer, which is offered by them at an exceptionally low price and was introduced last season, is referred to as having met with an unexpectedly large sale, giving general satisfaction. The company are also giving continued attention to their White Mountain freezer, which they are sparing no pains to maintain in the foremost position in the market. Their advertisement relating to their different freezers will be observed on page 71.

The Urann Toaster.

In the accompanying illustration we present a general view of a bread-toaster which is being offered to the trade by the Urann Mfg. Company, of Cleveland, Ohio. This toaster is so constructed that it may be used in connection with all kinds of stoves. As will be noticed from an inspection of the cut, the wire frame-work rests upon a sheet-steel bottom or plate, which may be removed at will and which prevents the smoke and flame from reaching the article placed upon the toaster. It may

The Urann Toaster.

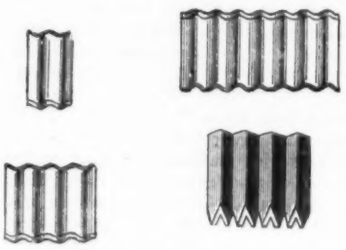
also be used while the coal or wood fire is in process of kindling, thus avoiding the necessity of waiting for the coals to become thoroughly ignited. It is stated that a number of the leading manufacterers of gas and gasoline stoves have adopted this toaster and are pushing it in connection with their own specialties.

Duplex Plumbs and Levels.

The two-fold merits of these tools consist of bringing together in one stock the ordinary form of leveling-glass, which may be observed from the top, and an additional leveling-glass inserted in the side for any uses where an observation sidewise may be more convenient. Both the plumb and level glasses, which are inserted in the side, are protected by handsome brass disks and may be seen from either side. In the construction of the circular leveling parts, which are seen from the sides, simplicity in the arrangement of the parts and the small amount of wood which is removed from the stock of the level for their insertion are claimed by the manufacturers to be valuable features. These goods are manufactured by the Stanley Rule and Level Company, of New Britain, Conn., and 29 Chambers street, New York, and are now first introduced to the notice of mechanics and dealers.

Improved Box Construction.

A corrugated steel fastener is being introduced by Pratt & Letchworth, Buffalo, N. Y., which seems destined to work an



Corrugated Steel Fastener.—Fig. 1.—Made in Different Lengths and of Various Forms of Points.

important change in the construction of boxes and various other pieces of woodwork. In the first of the accompanying

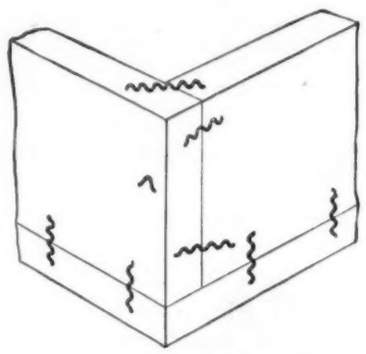


Fig. 2.—Application in Box Construction.

illustrations we show the fastener itself in different sizes and forms. It consists of a piece of corrugated sheet-steel, to the

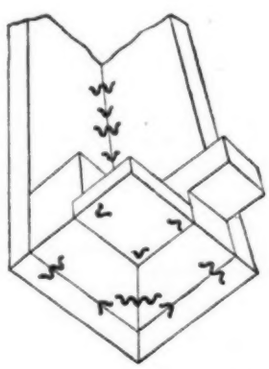
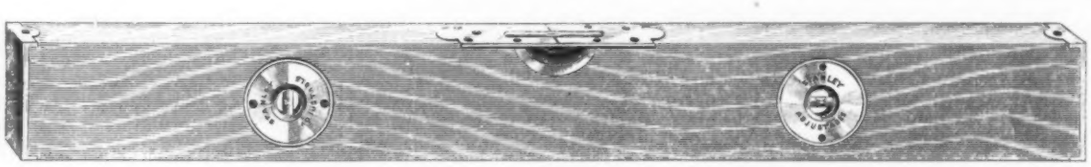


Fig. 3.—Use in Making a Carriage-Body Corner.

members of which there is imparted by means of special machinery a sharp penetrating edge adapted to be readily driven in soft or hard wood irrespective of the direction of the grain. When so driven its abrupt corrugations interlock with the wood and hold the same firmly together. The strip is furnished in different lengths, several of which are indicated in the views in Fig. 1, and also variously sharpened or



Duplex Plumbs and Levels.

pointed for different purposes. Figs. 2 and 3 show different applications of the device and readily suggest many further uses to which it may be put. It takes the place of dowels, and, as the manufacturers say, its proper use dispenses with tenons and mortises and makes a stronger, better joint with less expense than the ordinary methods. They also direct attention to the practical value of this device when used simply to prevent splitting, checking or warping, and point out that it interlocks with the grain and fiber of the wood, so that it is inseparable. For this purpose the form shown at the bottom and right in Fig. 1, with the pecular zizgag or multiple-pointed sharp draw cut edge which it has, proves desirable because it spreads and clinches into the wood. The manufacturers point out that an endless variety of manufactered articles may be greatly strengthened by the proper application of this device.

Improved Level-Sights.

We give two illustrations on this page which represent an ingenious means for transforming an ordinary spirit level into a leveling instrument, by which the exact level of two or more points at a distance from each other may be readily determined. Fig. 1 shows the sights attached to a level and in practical use. Fig. 2 gives an enlarged view of the sights detached, and in this form they can be packed away safely. They are manufactured by the Stanley Rule and Level Company, New Britain, Conn., and 29 Chambers street, New York.

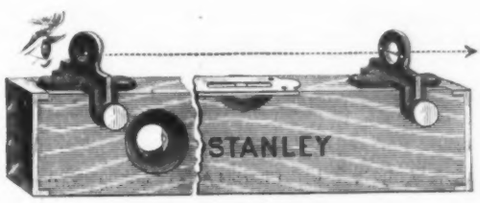


Fig. 1.—Improved Level-Sights.

Fig. 2.—Sights Detached.

NEW PUBLICATIONS.

MONOPOLIES AND THE PEOPLE. By Charles Whiting Baker, C.E., associate editor of the *Engineering News*.

The industrial history of the past few years has been one of such radical changes that any earnest effort to study the complex questions involved must command interest. It is unfortunate that for one who has access to the soberer discussion of a volume, hundreds have their opinions formed by the sensational editorials of newspapers and the invective of public speakers. The cry against monopoly has become the fashion. It gives the press and the demagogue cheap opportunities to pose as the champions of the people. It has aided them to foster the discontent which is the necessary foundation for the realization of their own selfish desires. It has given to earnest though misguided men the gratification of preaching a crusade and has furnished a welcome pretext to a certain class of economists to again urge their pet views.

The great trouble with all these good people is that they are not acquainted with the facts, that they rely altogether too much upon the reports in the newspapers. So far as one great branch of industry is concerned, we can very readily understand how false notions grow up. During the last two years, when competition had brought many branches of the iron and steel industry to a point which seemed hopeless to many engaged in it, the trust idea was hailed by many as its only salvation. The preliminary steps were taken, conferences followed and there was a good deal of discussion. Hopeful enthusiasts, to encourage their fellows, announced satisfactory progress or went so far as to claim complete success. The matter got into the newspapers. Another trust was formed and was duly entered in the list of these iniquitous organizatiens by the average editor, amateur economist and student of our industrial situation. These lists have displayed a vitality which is a discouraging illustration of the persistence of error. Mr. Baker, unfortunately, has became a victim to it The production of the following articles is claimed to be more or less completely in the hands of trusts: Coal, steel, steel rails, steel and iron beams, wrought-iron pipe, iron nuts, stoves, coke, lead and copper. As a matter of fact, the only trade association which has shown any life for any considerable period, an association which is far from being a trust, is that which regulates the price of beams. Only those who are close to its councils know how precarious has been its existence a good many times and how much and how often the spirit if not the letter of the compact has been violated. There was some talk of a trust in steel rails during the summer, but that has disappeared entirely. The present association practically amounts to nothing but an organization for the collection of certain statistics. It furnishes the pretext, too, for an annual gathering at Long Branch, when a trip to that seaside resort is quite pleasant. There is no trust in stoves and no organization worthy of attention in nails. The so-called Lead Trust deals with white lead and controls only a very small part, incidentally, of the production of the metal. There is no understanding whatever among the copper producers, but on the contrary there exists a very sharp, personal antagonism among half a dozen groups of leading interests. If the rest of the list quoted by all the writers on trusts and monopolies, among them Mr. Baker, has as little foundation in truth as that relating to the industries with which we are familiar the self-constituted champions of the people have little to fight for.

We can understand how the mistakes occur. On the strength of the statements of its promoters the newspapers record the formation of another trust. As difficulties and hitches multiply the reporter's informants disappear. It is not pleasant to go on record with a failure. The new-born trust continues to live in newspaper tradition, while its criminal beneficiaries are industriously cutting one another's throats with added vigor. If the trust era ever does come up in the memory of those who once fondly hoped for its consummation it merely recalls unpleasant revelations of human nature. Nor is Mr. Baker, like the majority of those who have approached the difficult problems, happier in his array of facts when he deals with "Monopolies of Mineral Wealth" than he is with "Monopolies in Manufacturing Industries." Speaking of Bessemer ore he says: "This ore is found most abundantly and of best quality in the mines of the Vermilion range, lying about 100 miles north of Duluth, Minn., and in the mines of the Marquette, Gogebic and Menominee regions in the North Michigan peninsula. According to good authorities a combination, more or less effective, has been formed among the owners of all these mines, and the highest price is charged for all the ore which can be obtained without driving the customer to distant markets for his supply. Among the mines of this district competition, if not entirely stopped, is greatly checked, and is likely soon to be a thing of the past." Anybody at all familiar with the iron trade knows that this statement is absolutely false. As good business men, it is the duty of the ore-miners of the lakes to get the highest prices which they can secure. Sometimes they get the lion's share of the profits and sometimes they do not. But there does not exist any concentration of ownership which could warrant the statement made or give color to the prediction that "competition is soon to be entirely a thing of the past." Possibly the following passage explains to some extent Mr. Baker's suspicions or those of his "good authorities." "It is an interesting fact that among the members of the syndicate which owns the principal mines in the Vermillion regions are some of the trustees of the Standard Oil Trust. It is stated that some of these mines have paid 90 per cent. per annum on their capital stock, which, it is to be noted, represents a much greater sum than the amount involved in the plant of the mine."

It is true that parties interested in the Standard Oil Company have largely invested in Vermilion mines, and that indirectly through their interest in the Illinois Steel Company they are owners of one of the great Gogebic mines. But it does not follow that their participation in these enterprises implies identical methods of management. We may remark incidentally, too, that in mineral property the plant is a very small fraction of the investment, and that, furthermore, returns must be measured, too, by the risk involved. An investment insurance company, if such an organization existed, would want pretty large premiums on mineral property of any kind. In this, as in all commodities, it is utterly unfair to single out any individual producer or group of producers and hold them up to public condemnation on the ground that they are earning exorbitant profits. The selling price is measured by the demand and the supply. If the former calls for such a quantity that in order to cover it concerns unable to produce cheaply must contribute to the supply, then the price must reach a figure to induce them to do so. If a demand develops and absorbs 200,000,000 pounds of copper annually at 13 cents it does not make any difference whether concerns having a capacity to furnish 150,000,000 pounds can place it on the market at 5 cents or at 10 cents. It depends upon whether the other 50,000,000 pounds needed can be brought out at 13 cents. If that figure checks consumption the price must come down. If it does not tempt enough producers and the demand is not satisfied the price must go up. But it is unfair to reflect upon those whose

natural advantages, superior skill or splendid management enable them to produce far below the price which balances demand and supply.

Mr. Baker, in discussing the coal trade, goes a little too far when he assumes that the coal trade of the United States is largely in the hands of monopolies. It is not even true that the anthracite trade is "an industry uncontrolled by competition." It is far less so in the case of bituminous coal. Efforts have been made again and again to bring the Atlantic sea-board coal trade into one combination or trust. The talk is revived every year. It has ended in miserable failure again and again.

But, it may be urged, even if the movement toward monopoly and toward the domination of trusts has not progressed as far as Mr. Baker, and with him a very large constituency among our people, sincerely though erroneously believe, is the danger any the less real, is the urgency for remedial measures any the less imperative? Does the circumstance that some of the facts adduced are rejected rob the whole chain of reasoning of its continuity and force? Let us examine it.

As the result of a study of competition, Mr. Baker formulates these laws:

In any given industry, the tendency toward monopoly increases:

1. As the waste due to competition increases. The waste of competition increases in proportion to its intensity.
   a. The intensity of competition increases as the number of competing units decreases.
   b. The intensity of competition increases with the amount of capital required for each competing unit
2. As the number of competing units decreases.
3. As the amount of capital required for each competing unit increases.
4. As the number of available natural agents decreases.

He adds:

The preceding diagram sets plainly before us the three great salient causes from which have grown the long list of monopolies under which our civilization labors. First, the supply of natural agents of which new competitors in any industry may avail themselves has been largely exhausted, or has been gathered up by existing monopolies to render their position more secure; the world has not the natural resources to develop that she had a century ago. Second, the concentration of all the productive industries, except agriculture, into great establishments, while it has enormously lessened the cost of production, has so reduced the number of competing units that a monopoly is the inevitable final result. Last, the enormous capital required for the establishment and maintenance of new competing units tends to fortify the monopoly in its position and render the escape of the public from its grasp practically impossible. These terse statements contain exactly the kernel of potent truth for which we are seeking. Monopolies of every sort are an inevitable result from certain conditions of modern civilization.

While no one will deny, since all have keenly felt, the waste due to competition, it may well be questioned whether its benefits have not on the other side overbalanced that waste many times over again. It has been and continues to be the most potent agent in our progress. We are inclined to believe that the destruction of capital, through the very fact of more rapid progress, by rendering serviceable plant and machinery obsolete, is almost as serious a source of waste as that due to competition in our industrial world, always excepting railways and the establishments catering to municipal wants. Yet no one will for that reason desire to stay our progress. Nor are we convinced that the tendency toward the aggregation of great capital necessarily implies that monopoly must be its inevitable result. It simply means that larger masses are employed against one another. The developments in the sugar trade may well illustrate our point. The establishment of the Spreckels refinery shows that large investments do not deter competition. Nor is the new works necessarily a useless addition to the plant of the country because the existing works are more than able to cover the demand. To us it simply means that an injudicious move has brought on suddenly what slow development would have brought about otherwise. The trust is trying to earn money on antiquated, poorly-located plants. They are propping up what ought to succumb. The new concerns represent, possibly in excess, capacity which modern progress has doomed to destruction. It may seem a waste, but it is inevitable. We see the same thing going on in the iron trade and in every industry in which displacements and rapid improvement are going on.

Mr. Baker reaches the conclusion that the remedy for the evils of monopoly is not abolition but control. We agree with him where true monopolies are possible, as in granting of special privileges by the general Government, including the right to work mineral lands and the control of mineral ores, as in the case of State franchises to railways and corporations, and as in the case of municipal grants like light and power companies and street railways. But in trade and in manufacturing the evils of competition are outbalanced by the advantages, and other dangers of monopoly are averted by the abundance and mobility of capital.

The Projected Jungfrau Railroad.

The project for a railroad to the summit of the Jungfrau, in Switzerland, which rises to a hight of about 13,670 feet, has latterly assumed more tangible shape. Two designs have been proposed, one by Mr. Moritz Köchlin, at one time connected with the building of the Eiffel Tower, and the other by Mr. Trautweiler, engineer of the St. Gothard and Brünig Railroads. Of these the first is understood to have received favorable consideration. The mountain road proper will be about 3.3 miles long. This section is to be built either on the rack system of the Mt. Pilatus Railroad or is to be divided up into five sections of cable road, worked by water-power. At the end of each of these sections the passengers will be transferred to a car on the succeeding section. A reservoir on the summit of the mountain, supplied by a series of pumps at different levels, is to furnish the required water-power. Freezing of the water is to be avoided by suitable chemical additions. Still another solution of the problem embraces the use of electricity as motive power for a rack-road, power for generating the electric current being available from the various brooks descending into the valley. Mr. Trautweiler's design provides for an under-ground road over the whole mountain section, thus seeking to avoid climatic difficulties. There are to be four sections of a large pipe conduit, and the power is to be furnished by means of a cable. To drive this compressed air is to be used, instead of water-power. Mr. Köchlin's estimate of the cost of building the road is 9,750,000 francs, while Mr. Trautweiler's estimate reaches only 5,750,000 francs.

A New Steamer.—The new steel steamship Kansas City, just put on the route between New York and Savannah by the Ocean Steamship Company, is a creditable addition to the American fleet. She was built at Chester, Pa., at the yards of the Delaware River Iron Shipbuilding and Engine Works. The plans were drawn by P. E. Le Fevre, superintendent engineer of the line, and the vessel was built under his supervision. Her dimensions are as follows: Length, 349 feet; beam, 45 feet; depth, 27 feet 6 inches. The engines are of 3600 horse-power, triple expansion, carrying steam at a pressure of 160 pounds to the square inch, supplied from 8 boilers heated by 16 furnaces. The cylinders are 33 inches, 54 inches and 86 inches respectively, with a stroke of 54 inches. The capacity of the vessel is the bulk of 6000 bales of cotton; her gross measurement is 4000 tons, and she is built for a speed of 14 knots per hour.

An important discovery of copper ore is reported to have been made on the farm of W. G. Stewart, about three miles from Dubuque, Iowa. Miners were looking for lead and struck a rich vein of copper about 80 feet below the surface. An analysis of the ore submitted shows at least 20 per cent. of pure ore.

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CURRENT HARDWARE PRICES.

DECEMBER 31, 1889.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers at the figures named.

Ammunition.—

Caps, Percussion, ᵖ 1000—

Hicks & Goldmark's and Union Metallic Cartridge Co.
F. L. Waterproof, 1-10's.....34@35¢
E. B. Trimmed Edge, 1-10's.....46@48¢
E. B. Grnd. Edge, Cent. Fire, 1-10's.....46@47¢
Musket Waterproof, 1-10's.....50¢
G. D.....28¢
S. B. Genuine Imported.....45¢
Eley's E. B.....54¢ @ 55¢
Eley's D Waterproof, Central Fire...$1.60

Cartridges.

Rim Fire Cartridges.....50&5&2 %
Rim Fire Military.....15&2 %
Cent. Fire, Pistol and Rifle.....25&5&2 %
Cent. Fire, Military and Sporting 15&5&2 %
Blank Cartridges, except 22 and 32 cal., additional 10 % on above discounts.
Blank Cartridges, 22 cal., $1.75.....2 %
Blank Cartridges, 32 cal., $3.50.....2 %
Primed Shells and Bullets.....15&5&2 %
B. B. Caps, Round Ball, $1.75.....2 %
B. B. Caps, Con. Ball, Swgd., $2.00.....2%

Primers—

Berdan Primers, $1.00.....2%
B. L. Caps (for Sturtevant Shells) $1.00, 2%
All other Primers, $1.20.....2%

Shells—

First quality, 4, 8, 10 and 12 gauge 25&10&2%
First quality, 14, 16 and 20 gauge ($10 list).....30&10&2%
Star, Club, Rival and Climax brands, 20&10&2%
Selbold's Comb. Shot Shells.....15&2%
Brass Shot Shells, 1st quality.....60&2%
Brass Shot Shells, Club, Rival, Climax.. 65&2%
I X L, 10 and 12 guage.....40&5&2%
"Special," 16 gauge.....30&10&5&2%
"Special," 10 and 12 gauge.....40&10&2%
Fowler's Pat.....$3.25

Shells Loaded—

Standard. List.....40@40&5%

Wads—

U. M. C. & W. R. A.—B. E., 11 up..$2.00
U. M. C. & W. R. A.—B. E., 9&10..2.30
U. M. C. & W. R. A.—B. E., 7&8...2.60
U. M. C. & W. R. A.—P. E., 11 up..3.10
U. M. C. & W. R. A.—P. E., 9&10..4.00
U. M. C. & W. R. A.—P. E., 7&8...4.90
Eley's B. E., 11 up.....$1.75
Eley's P. E., 11@20.....2.80

Anvils.—

Eagle Anvils, ᵖ ℔ 10¢.....20@20&5%
Peter Wright's.....10¼¢
Armitage's Mouse Hole.....8¾¢
Armitage's Mouse Hole, Extra.11¼@11½¢
Trenton.....9½@9¾¢
Wilkinson's.....9¼@10¢
J. & Riley Carr, Pat. Solid.....11@11¼¢
Moore & Barnes Mfg. Co.....33⅓%

Anvil Vise and Drill—

Millers Falls Co..$18.00.....20%
Cheney Anvil and Vise.....25%
Allen Anvil and Vise, $8.00.....40&10%

Apple Parers—

Advance.....ᵖ doz $4.75
Antrim Combination.....ᵖ doz 5.50
Baldwin.....ᵖ doz 5.25
Champion.....ᵖ doz 7.25
Daisy.....ᵖ doz 4.00
Eureka, 1888.....each 17.00
Family Bay State.....ᵖ doz 12.00
Favorite.....ᵖ doz 5.00
Gem.....ᵖ doz 5.25
Gold Medal.....ᵖ doz 4.00
Ideal.....ᵖ doz 4.00
Improved Bay State.....ᵖ doz 30.00
Little Star.....ᵖ doz 4.50
Monarch.....ᵖ doz 13.50
New Lightning.....ᵖ doz 5.50
Oriole.....ᵖ doz 4.00
Penn.....ᵖ doz 4.00
Perfection.....ᵖ doz 4.00
Pomona.....ᵖ doz 4.00
Rocking Table.....ᵖ doz 6.00
Turntable.....ᵖ doz 4.50
Victor.....ᵖdoz 13.50
Waverly.....ᵖ doz 4.00
White Mountain.....ᵖ doz 4.50
72.....ᵖ doz 4.25
76.....ᵖ doz 5.75
78.....ᵖ doz. 6.50

Augers and Bits—

Douglass Mfg. Co.
Wm. A. Ives & Co.
Humphreysville Mfg. Co. 70%
French, Swift & Co. (F. H. Beecher, Rockford Bit Company.
Cook's, Douglass Mfg. Co.....55 %
Cook's, N. H. Copper Co.50&10@50&10&5%
Ives' Circular Lip.....60%
Patent solid Head.....30%
C. E. Jenning & Co., No. 10, extension lip.....40%
E. Jennings & Co., No. 30.....60%
E. Jennings & Co., Auger Bits, ᵖ set, 32⅛ quarters, No. 5, $5; No. 30, $3.50..20%
Lewis' Patent Single Twist.....45%
Russell Jennings' Augers and Bits.....25%
Imitation Jennings' Bits.....60@60&5%
Snell's Jennings Pattern.....60%
Pugh's Black.....20%
Rockford, Jenning's Pattern.....60%
Car Bits.....50&10@60%
Snell's Car Bits.....60%
L. Hommodieu Car Bits.....15&10%
Worstner Pat. Auge Bits.....10%
Cincinnati Bell-Hangers' Bits.....30%

Hollow Augers—

Ives'
French, Swift & Co. 33⅓@33⅓&10%
Douglass'
Bonney's Adjustable, ᵖ doz $48...40&10%
Stearns'.....20&10%
Ives' Expansive, each $4.50.....50&5%
Universal Expansive, each $4.50.....20%
Wood's.....25@25&10%
Cincinnati Adjustable.....30@30&5%
Cincinnati Standard.....25&10%

Expansive Bits—

Clarks' small, $18; large, $26...35@35&5%
Ives' No. 4, ᵖ doz $60.....40%
Swan's.....40%
Steer's, No. 1, $26; No. 2, $22.....35%
Stearns' No. 2, $48.....20%

Gimlet Bits—

Common.....ᵖ gross $2.75@$3.25
Diamond.....ᵖ doz $1.10.....25&10%
Bee.....25@25&5%
Double Cut, Sheparison's.....45@45&10%
Double Cut, Ct. Valley Mfg. Co...30&10%
Double Cut, Hartwell's, ᵖ gro.....$5.25
Double Cut, Douglass'.....40&10%
Double Cut, Ives'.....60@60&10%

Bit Stock Drills—

Morse Twist Drills.....50&10&5%
Standard.....50&10&5%
Cleveland.....50&10&5%
Syracuse, for metal.....50&10%
Syracuse, for wood (wood list).30@30&5%
Williams' or Holt's, for metal.50&10&10%
Williams' or Holt's, for wood...40&10%
Cincinnati, for wood.....30&5%
Cincinnati, for metal.....40&10%

Ship Augers and Bits—

L'Hommedieu's.....15&10@15&10&5%
Watrous'.....15&10@15&10&10%
Snell's.....15&10@15&10&5%
Snell's Ship Auger Patt'n Car Bits, 15&10&15&10@5%

Awl Hafts—

Sewing, Brass Fer. ᵖ gr, $3.50.....45&10%
Pat. Sewing, Short.$1.00 ᵖ doz,.....40&10%
Pat. Sewing, Long.....ᵖ doz $1.20
Pat. Peg, Plain Top. ᵖ gr $10.00...45&10%
Pat. Peg, Leather Top. ᵖ gr $12.00.45&10%

Awls, Brad Sets, &c—

Awls, Sewing, Common ᵖ gr $1.50, 35%
Awls, Should. Peg. ᵖ gr $2.45, 40@40&10%
Awls, Pat. Peg...ᵖ gr 63¢ ... 40@40&10%
Awls, Shouldered Brad..2.70 ᵖ gr.....35%
Awls, Handled Brad...$7.50 ᵖ gr.....45%
Awls, Handled Scratch ᵖ gr, $7.50.35&10%
Awls, Socket Scratch. ᵖ doz, $1.50.25@30%

Awl and Tool Sets—

Aiken's Sets, Awls and Tools, No. 20, ᵖ doz $10.00.....55&10%
Fray's Adj. Tool Hdls., Nos. 1, $12; 2, $18; 3, $12; 4, $9.....25@25&10%
Miller's Falls Adj. Tool Hdls.. Nos. 1, $12, 2, $18.....25%
Henry's Combination Haft...ᵖ doz $6.50
Brad Sets, No. 42, $10.50; No. 43, $12.50..70&10&5%
Stanley's Exceisior: No. 1, $7.50; No. 2, $4.00; No. 3, $5.50.....30&10%

Axes—

Makers' and Special Brands—

First quality.....ᵖ doz $6.00@$6.50
Others.....ᵖ doz $5.50@$5.75

Axle Grease—

Fraser's.....Keg ᵖ ℔ 4¢, Pail ᵖ ℔ 5¢
Fraser's, in boxes.....ᵖ gr $9.50
Dixon's Everlasting, in bxs...ᵖ doz 1 ℔ $1.20; 2 ℔ $2.00
Dixon's Everlasting....10-℔ pails, ea. 85¢
Lower grades, special brands, ᵖ gr $5.50@$7.00

Axles—

No. 1, 4¼@5¢, No. 2 5¼@6¼¢
Nos. 7 to 14.....55&5% } 3 % cash
Nos. 15 to 18.....47½% }
Nos. 19 to 22.....70%
National Tubular Self-Oiling: Standard Farm (1 to 5) and Special Farm (A1 to A5):
Less than 10 sets.....33⅓%
Over 10 sets.....33⅓&5%

Bag Holders.—

Sprengle's Pat.....ᵖ doz $18.....60%

Balances—

Spring Balances.....50%
Common 24-℔.....ᵖ doz $1.50.....50%
Chatillon's Spring Balances.....50%
Chatillon's Circular Spring Balances.60%

Basins, Wash—

Standard Fiberware, No. 1, 10½-inch, $2; 12-inch, $2.25; 13½-inch, $2.75; 15-inch, $3.25.

Bells—

Hand—

Light Brass.....70&10 @ 75%
Extra Heavy.....60&10%
White Metal.....60&10&10%
Silver Chime.....33⅓&10%
Globe (Cone's Patent).....25&10@35%

Door—

Gong, Abbe's.....33⅓&10%
Gong, Yankee.....45&10%
Gong, Barton's.....40&10@50%
Crank, Taylor's.....25&10%
Crank Brooks'.....50&10&2%
Crank Cone's.....10%
Crank, Connel's.....20&10%
Lever, Sargent's.....60&10%
Lever, Taylor's Bronzed or Plated...net
Lever, Taylor's Japanned.....25&10%
Lever, R. E. M. Co.'s.....50&10&2%
Pull, Brook's.....50&10&2%
Pull, Western.....25&10%

Cow—

Common Wrought.....60&10%
Western.....20&10%
Western, Sargent's list.....70&10%
Kentucky, "Star".....20&10%
Kentucky, Sargent's list.....70&10%
Dodge, Genuine Kentucky.....70@70&10%
Texas Star.....50&10@50&10&5%
Call.....40@40&5%
Farm Bells.....ᵖ ℔ 3¢@3½¢
Steel Alloy Church and School Bells..40%

Bellows—

Blacksmiths'.....60@60&5%
Molders'.....40@40&10%
Hand Bellows.....40&10@50%

Belting, Rubber—

Common Standard.....70&10%
Standard.....70&70&5%
Extra.....60&5@60&10%
N. Y. B. & P. Co., Carbon.....60&10&5%
N. Y. B. & P. Co., Diamond.....50&10%

Bench Stops—

Morrill's.....ᵖ doz $9, 50%
Hotchkiss'.....ᵖ doz $5, 10&10&10%
Weston's, No. 1, $10; No. 2, $9.25&10&5%
McGill's.....ᵖ doz $3.....10%
Cincinnati.....25&10%

Bits—

Auger, Gimlet, Bit Stock, Drills, &c., see Augers and Bits.

Bit Holders—

Extension,
Barber's, ᵖ doz $15.00.....40@40&10%
Ives, ᵖ doz $20.00.....60&5@60&10%
Diagonal.....ᵖ doz $24.00, 40%
Angular.....ᵖ doz $24.00, 40&5%

Blind Adjusters—

Domestic.....ᵖ doz $3.00, 33⅓%
Excelsior.....ᵖ doz $10.00.....50&10&2%
Washburn's Self-Locking.....20&20&10%

Blind Fasteners.

Mackrell's, ᵖ doz. $1.00.....20@20&10%
Van Sand's Screw Pat., $15 ᵖ gr..60&10%
Van Sand's Old Pat., $15.00 ᵖ gr..55&10%
Washburn's Old Pattern, ᵖ gr.....$9.00
Merriman's.....new list
Austin & Eddy No. 2008, ᵖ gr.....$9.00
Security Gravity, ᵖ gr.....$9.00

Blind Staples—

Barbed, ½ in. and larger.....ᵖ ℔ 7½@8¢
Barbed, ⅝ in.....ᵖ ℔ 8½@9¢

Blocks—

Ordinary Tackle, list May 20, 1889...50%
Cleveland Block Co., Mal. Iron.....50%
Moore's Novelty, Mal. Iron.....50%

Bolts—

Door and Shutter—

Cast Iron Barrel, Square, &c..70@70&10%
Cast Iron Shutter Bolts.....70@70&10%
Cast Iron Chain (Sargent's list).....65&10%
Ives' Patent Door Bolts.....60%
Wrought Barrel.....70@70&10%
Wrought Square.....70@70&10%
Wr't Shutter, all Iron, Stanley's..60&10%
Wr't Shutter, Brass Knob, " ..40&10%
Wr't Shutter, Sargent's list.....60&10%
Wr't Sunk Flush, Sargent's list...55&10%
Wr't Sunk Flush, Stanley's list...50&10%
Wr't B.K. Flush, Com'n " ..55&10%

Carriage, Machine, &c.—

Com. list June 10, '84.....70&12½&2%
Genuine Eagle, list Oct., '84...75&10@80%
Phila. pattern, list Oct. 7, '84..80@80&10%
R.B.&W., old list.....70%
Machine, according to size...75&10@80%
Bolt Ends, according to size..75&10@80%

Tire—

Common, list Feb. 28, '83.....67½%
Port Chester Bolt and Nut Company:
Empire, list Feb 28, '83.....67½%
Keystone, Philadel., list Oct. '84...80%
Norway, Phila., list Oct. '84.....75%
American Screw Company:
Norway, Phil., list Oct. 16, '84.....75%
Eagle, Phil., list Oct. 16, '84.....80%
Philadel., list Oct. 16, '84.....80%
Bay State, list Feb. 28, '83.....67½%
R.B.&W., Philadel., list Oct. 16, '84...80%

Stove and Plow—

Stove.....62½%
Plow.....60&5%
R. B. & W., Plow.....55%

Borax.....ᵖ ℔ 9½@10¼¢

Boring Machines—

	Without Augers.	Upright.	Angular.
Douglas	$5.50	$6.75	50%
Snell's, Rice's Pat.	5.50	6.75	40&10&10
Jennings	5.50	6.75	45@45&10
Other Machines	2.35	2.75	net
Phillips' Patent with Augers	60	7.50	

Bow Pins—

Humason, Beckley & Co.'s.....60&10%
Sargent & Co's...$17 and $18.....60&10%
Peck, Stow & W. Co 50&10&50&10%

Braces.—

Barber's,
Nos. 10 to 16.....10%
Nos. 30 to 33.....50%
Nos. 40 to 63.....50&10%
Barker's.
Nos. 8, 10 and 12.....75&10@80%
Plated, Nos. 8, 10 and 12.....65&10@70%
Osgood's Ratchet.....40&10&50%
Spofford's.....50&5@50&10%
Ives' New Haven Novelty.....70@70&5%
New Haven Ratchet.....60&5@60&10%
Barber Ratchet.....60&5@60&10%
Barbers.....60&5%
Spofford.....60&5@60&10%
Common Bail, American.....$1.00@$1.10
Bartholomew's,
Nos. 25, 27 and 30.....50&10@60&5%
Nos. 117, 118, 119.....70@70&5%
Amidon's
Barker's Imp'd Plain.....75&10@80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet.....75&10@80%
Eclipse Rachet.....60%
Globe Jawed.....40@40&10%
Corner Brace.....40@40&10%
Universal, 8 in., $2.10 10 in.....$2.25
Buffalo Bail.....$1.10@$1.15
P. S. & W.....50&10%

Brackets—

Shelf plain, Sargent's list, 55&10@55&10&10%
Shelf, fancy, Sargent's list, 60&10@60&10&10%
Reading, plain.....50&10@60&10&5%
Reading, Rosette.....60&10@60&10&10%

Bright Wire Goods.....85%

Broilers—

Henis' Self-Basting. } Inch..... ᵖ 10 9x11
Per doz...$4.50 5.50 6.50

Buckets—See Well Buckets and Pails.

Bull Rings—

Union Co. Nut.....55%
Sargent's.....60%&10@70&5%
Hotchkiss' low list.....30%
Humason, Beckley & Co.'s.....70%
Peck, Stow & W. Co's..50&10@50&10&10%
Ellrich Hdw. Co., White Metal, low list. 50@50&10%

Butcher's Cleavers—

Bradley's.....25@30%
L. & I. J. White.....20&5%
Beatty's.....40@40&5%
New Haven Edge Tool Co.'s.....40%
P. S. & W.....33⅓&5@33⅓&10%
Foster Bros.....30%
Schulte, Lohoff & Co.....40@40&5%

Butts—

Brass—

Wrought Brass.....75@75&10%
Cast Brass, Tiebout's'.....33⅓%
Cast Brass, Corbin's, Fast.....33⅓&10%
Cast Brass, Loose Joint.....33⅓&10%

Cast Iron—

Fast Joint, Narrow.....50&10&5@60&5%
Fast Joint, Broad.....55&10&5@60&10%
Loose Joint,
Loose Joint, Japanned
Loose Joint, Jap. with Acorns
Parliament Butts. } .70&5@
Mayer's Hinges. } 70&10%
Loose Pin, Acorns,
Loose Pin, Acorns, Japanned
Loose Pin, Acorns, Japanned, Plated Tips

Wrought Steel—

Fast Joint, Narrow.....
Fast Joint, Lt. Narrow.....
Fast Joint, Broad.....
Loose Joint, Broad. } .70&5@
Table Butts, Back Flaps, &c. } 70&1.%
Inside Blind, Regular.....
Inside Blind, Light.....
Loose Pin.....
Bronzed Wrought Butts.....50%

Calipers—

See Compasses.

Calks, Toe—

Gautier.....ᵖ ℔ 5½@6¢
Dewicks (Burke).....ᵖ ℔ 5½@6¢

Can Openers—

Messenger's Comet.....ᵖ doz $3.00, 25%
American.....ᵖ gross $3.00
Duplex.....doz 25¢, 15&20%
Lyman's.....ᵖ doz $3.75, 20%
No. 4 French.....ᵖ doz $2.25, 55@60%
No. 5, Iron Handle.....ᵖ gr $6.00, 45&50%
Eureka.....ᵖ doz $2.50, 10%
Sardine Scissors.....ᵖ doz $2.75@3.00
Star.....ᵖ doz $2.75
Sprague, No. 1, $2.00; 2, $2.25; 3, $2.50 50&10&10%
World's Best, ᵖ gross, No. 1, $12.00 No. 2, $24.00; No. 3, $36.00.....50&10%
Universal, ᵖ doz $3.00.....35&5%
Domestic, ᵖ doz $2.50.....45%
Champion ᵖ doz $2.00.....50%

Cards—
Horse & Curry.....10&10@10&10&10%
Cotton.....10@10&10%
Wool.....10@10&10%

Carpet Stretchers—
Cast Steel, Polished.....₱ doz $2.25
Cast Iron, Steel Points.....₱ doz 80¢
Socket.....₱ doz $1.75
Bullard's.....25@25&10%

Carpet Sweepers—
Bissell No. 5.....₱ doz $17.00
Bissell No. 7 New Drop Pan.₱ doz $19.00
Bissell, Grand.....₱ doz $36.00
Grand Rapids.....₱ doz $24.00
Crown Jewel, No. 1, $18.00; No. 2, $19.00; No. 3, $20.00
Magic.....₱ doz $15.00
Jewel.....₱ doz $17.00
Improved Parlor Queen, Nickeled..₱ doz $27.00
Japanned..₱ doz $24.00
Excelsior.....₱ doz $22.00
Garland.....₱ doz $18.00
arior Queen.....₱ doz $24.00
Housewife's Delight.....₱ doz $15.00
Queen.....₱ doz $16.00
Queen, with band..₱ doz $18.00
King.....₱ doz $30.00
Weed, Improved.....₱ doz $18.00
Hub.....₱ doz $16.00
Cog-Wheel.....₱ doz $16.00
Conqueror.....₱ doz $22.00
Easy.....₱ doz $22.00
Monarch.....₱ doz $22.00
Goshen.....₱ doz $21.00
Advance.....₱ doz $18.00
Ladies' Friend, No. 1, ₱ doz, $15.00; No. 2.....₱ doz $16.00
American.....₱ doz $15.00
Grand Republic.....₱ doz $35.00

Cartridges—
See Ammunition.

Casters—
Bed..... } Brass....55@55&10%
Plate..... } Others...30@30&10%
Shallow Socket.....
Deep Socket.....40&10%
Yale Casters, list May, 1884...30&10@40%
Yale, Gem.....60@60&5%
Martin's Patent (Phœnix).....45&10@50%
Payson's Anti-friction.....60@60&10%
Giant Truck Casters.....30%
Stationary Truck Casters.....50&10%
Socket Truck Casters.....50%

Cattle Leaders—
Humason, Beckley & Co.'s.....70%
Sargent's.....60%&10%
Hotchkiss.....30%
Peck, Stow & W. Co.....50&10%

Chain—
Trace, 6¼-10-2, exact, ₱ pair, $1.03.....50&10@50&10&5%
Trace, 6¼-10-3, exact, ₱ pair 92¢.....50&10@50&10&5%
Trace, 7-10-2, exact, ₱ pair $1.11.....50&10@50&10&5%
NOTE.—Traces, "Regular" sizes, 3¢ net ₱ pair less than exact.
Log, Fifth, Stretcher, and other fancy Chains, List Nov. 1, 1884 50&10@50&10&5%
American Coil, in cask lots,
3-16 ¼ 5-16 ⅜ 7-16 ½ ⅝ ¾
$8.00 5.70 4.80 4.20 3.90 3.75 3.65 3.55
Less than cask lots, add ¼¢@½¢ ₱ ℔.
German Coil, list of June 20, 1887 50&10&5@60%
German Halter Chain, list of June 20, 1887.....50&10&5@60%
Covert Halter.....60&2%
Covert Traces.....35@2%
Oneida Halter Chain.....60@60&5%
Galvanized Pump Chain.....₱ ℔ 55¢
Jack Chain, Iron.....75@75&5%
Jack Chain, Brass.....70@70&5%

Chalk—
White.....₱ gr 50¢
Red.....₱ gr 70¢
Blue.....₱ gr 85¢
See also Crayons.

Chalk Lines—
See Lines.

Chisels—
Socket Framing and Firmer.
P. S. & W.....
New Haven.....
Witherby.....
Mix.....
Ohio Tool Co.....
} .75 @ 75&10 %
Douglass.....75@75&5%
Buck Bros.....30%
Merrill.....60&10@60&10&5%
L. & I. J. White.....30@30&5%
Tanged and Miscellaneous.
Tanged Firmers.....40&10@50%
Butchers'.....$4.75@$5.00
Spear & Jackson's.....$5 to £
Buck Bros.....30%
Cold Chisels, ₱ ℔.....10@19¢

Chucks—
Beach Pat.....each, $8.00.....20%
Morse's Adjustable, each, $7.00, 20@20&5%
Danbury.....each, $6.00, 30@30&5%
Syracuse, Bals Pat.....25%
Skinner's Pat. Drill Chucks.....30%
Skinner's Independent Lathe Chucks.40%
Skinner's Pat. Comb. Chuck.....40%
Union Mfg. Co.,
Victor.....$8.50, 25%
Combination.....40%
Universal.....40%
Independent.....40%

Clamps—
R. I. Tool Co.'s Wrought Iron.....25%
Adjustable, Cincinnati.....15&10%
Adjustable, Hammers.....15%
Adjustable, Stearn's.....20&10%
Stearn's Adjustable Cabinet and Corner.....20&10%
Cabinet, Sargent's.....60%&10%
Carriage Makers', Sargent's.....70&10%
Eberhard Mfg. Co.....40&5@40&10%
Warner's.....40&10@40&10&5%
Saw Clamps, see Vises.
Carpenters', Cincinnati.....1.5%

Clips—
Norway, Axle, ¼ & 5-16.....55@5&5%
2nd grade Norway Axle, ¼ & 5-16 65&5%
Superior Axle Clips.....66⅔&5&70%
Norway Spring Bar Clips, 5-16..60&5&5%
Wrought-Iron Felloe Clips.....₱ ℔, 5½¢
Steel Felloe Clips.....₱ ℔, 5¢
Baker Axle Clips.....25%

Cockeyes.....50%

Cocks, Brass.
Hardware list.....50&2%

Coffee Mills—
Box and Side, List Jan. 1, 1888.....60&2%
American, Enterprise Mfg Co.20&10@30%
The Swift, Lane Bros.....20&10%

Compasses Dividers, &c—
Compasses, Calipers, Dividers.70@70&10%
Bemis & Call Co.'s
Dividers.....60&5%
Compasses & Calipers.....50&5%
Wing and Inside or Outside.....50&5%
Double.....60%
(Call's Pat. Inside).....30%
Excelsior.....50%
J. Stevens & Co.'s.....25&10%
Starrett's
Spring Calipers and Dividers 25&10&10%
Lock Calipers and Dividers.....25&10%
Combination Dividers.....25&10%

Coopers' Tools—
Bradley's.....20%
Barton's.....20@20&5%
L. & I. J. White.....20&5%
Albertson Mfg. Co.....25%
Beatty's.....30%
Sandusky Tool Co.....30@30&5%
Shaves, Cincinnati Tool Co.....20%

Corkscrews—
Humason & Beckley Mfg. Co..40@40&10%
Clough's Pat.....33⅓@33⅓&5%
Howe Bros & Hulbert.....35%

Corn Knives and Cutters—
Bradley's.....10%
Wadsworth's.....25%

Cradles—
Grain.....50&5&2 @ 50&10&2%

Crayons.
White Crayons, ₱ gr 12¢@12½¢.....10%
D. M. Stewart Mfg. Co., Metal Workers, ₱ gr, $2.50.....25%
D. M. Stewart Mfg. Co., Rolling Mill, ₱ gr, $2.50.....25%
See also Chalk.

Crow Bars—
Cast Steel.....₱ ℔ 4½¢
Iron, Steel Points.....₱ ℔ 3½¢

Curry Combs—
Fitch's..... 50&10@50&10&10%
Rubber per doz $10.00.....20%
Perfect.....50%

Curtain Pins—
Silvered Glass.....net
White Enamel.....net

Cutlery—
Beaver Falls & Booth's.....33⅓
Wostenholme.....$7.75 to £

Dampers, &c—
Dampers, Buffalo.....40&10%
Buffalo Damper Clips.....40&10%
Crown Damper.....40%
Excelsior.....40&10%

Dividers—
See Compasses.

Dog Collars—
Embossed, Gilt, Pope & Steven's list 30&10%
Leather, Pope & Steven's list.....40%
Brass, Pope & Steven's list.....40%

Door Springs—
Torrey's Rod, regular size....₱ doz $1.30
Gray's, ₱ gr., $20.00.....20%
Bee Rod ₱ gr., $20.00.....20%
Warner's No. 1, ₱ doz, $2.50; No. 2, $3.30.....40&10@50%
Gem (Coil), list April 19, 1886.....10%
Star (Coil), list April 19, 1886.....20%
Victor (Coil).....60@60&10%
Champion (Coil).....60&10@60&10&10%
Philadelphia, 5 in., $5.00; 8 in., $7.75.. %
Cowell's....No. 1, ₱ doz, $18.00; No. 2, $15.00.....50%
Rubber, complete, ₱ doz, $4.50....55&10%
Hercules.....50%
Shaw Door Check and Spring.25@30@35%

Drawing Knives—
Witherby.....
P. S. & W.....
Mix.....
New Haven.....
} .75 @ 75&10 %
Merrill.....60&10@60&10&5%
Douglas.....75@75&5%
Watrous.....15&10@25%
L. & I. J. White.....20&5%
Bradley's.....35%
Adjustable Handle.....25@33⅓%
Wilkinson's Folding.....25@25&5%

Drills and Drill Stocks—
Blacksmiths'.....each $1.75
Blacksmiths' Self-Feeding, each $7.50.20%
Breast, P. S. & W.....40&10%
Breast, Wilson's.....30&5%
Breast, Millers Falls.....each $3.00, 25%
Breast, Bartholomew's.....each $2.50, 25&10@40%
Ratchet, Merrill's.....20@20&5%
Ratchet, Ingersoll's.....25%
Ratchet, Parker's.....20@20&5%
Ratchet, Whitney's.....20&10%
Ratchet, Weston's.....20@25%
Ratchet, Moore's Triple Action...25@30%
Ratchet, Curtis & Curtis.....30 %
Whitney's Hand Drill, Plain, $11.00; Adjustable, $12.00.....20&10%
Wilson's Drill Stocks.....10%
Automatic Boring Tools... $1.75@$1.85
Twist Drills—
Morse.....50&10&5%
Standard.....50&10&5%
Syracuse (Metal list).....50&10%
Cleveland.....50&10&5%
Williams.....50&10&10%
New Process.....50&10&5%

Drill Bits.—See Augers and Bits

Drill Chucks.—See Chucks.

Dripping Pans—
Small sizes.....₱ ℔ 6½¢
Large sizes.....₱ ℔ 5½¢

Egg Beaters.
Dover.....₱ doz $1.50
National, ₱ doz $4.50.....33⅓%
Family (T. & S. Mfg. Co.), ₱ gro $17.00@$18.00
Duplex (Standard Co.).....₱ doz $1.25
Rival (Standard Co.).....₱ doz $1.00
Duplex Extra Heavy (Standard Co.)...₱ doz $3.50
Triumph (T. & S. Mfg. Co.), ₱ gro $10.50@$11.50
Advance, No. 1.....₱ gro $10.50
Advance, No. 2.....₱ gro $10.00
Bryant's.....₱ gro $14.00
Ayres' Spiral.....₱ gro $5.00
Double (H. & R. Mfg. Co).....₱ gro $16.20
Easy (H. & R. Mfg. Co.).....₱ gro $14.00
Triple (H. & R. Mfg. Co.).....₱ gro $16.20
Spiral (H. & R. Mfg. Co.).....₱ gro $4.50
Paine, Diehl & Co.'s.....₱ gro $24.00

Egg Poachers—
Buffalo Steam Egg Poachers, ₱ doz, No. 1, $6.00; No. 2, $9.00.....25%

Electric Bell Sets.—
Wollensak's.....20%
Bigelow & Dowse.....20%

Emery— No. 4 to 46 gr. | No. 54 to 150 gr. | Flour, CF FF.
Kegs, ₱ ℔.....4½¢ | 5 ¢ | 2½¢
¼ kegs, ₱ ℔....4½¢ | 5½¢ | 2¾¢
⅛ kegs, ₱ ℔...5 ¢ | 5½¢ | 3 ¢
10-℔ cans, 10 in case.....6 ¢ | 6¼¢ | 5 ¢
10-℔ cans, less than 10.....10 ¢ | 10 ¢ | 7½¢

Enameled and Tinned Ware—
See Hollow-Ware.

Escutcheon Pins—
Iron, list Nov. 11, 1885..50&10@50&10&5%
Brass.....60@60&5%

Escutcheons.
Door Lock....Same dis as Door Locks.
Brass Thread.....60@60&10%
Wood.....25%

Faucets.—
Fenn's.....40%
Bohren's Pat. Rubber Ball.....25%
Fenn's Cork Stops.....33⅓%
Star.....60%
Frary's Pat. Petroleum.....40&5&2%
B. & L. B. Co.
West's Lock, Open and Shut Key...50%
Star, Metal Plug, new list.....40%
Lockport, Metal Plug, reduced list..60%
Metallic Key, Leather Lined...60&10@60&10&10%
Cork Lined.....70&5@70&10%
Burnside's Red Cedar.....50%
Burnside's Red Cedar, bbl lots....50&10%
John Sommers'
Peerless Best Block Tin Key.....40%
IXL, 1st quality, Cork Lined.....50%
Diamond Lock.....40%
Perfection, Fla. Red Cedar.....50%
Goodenough Cedar.....50%
Boss Metallic Key.....50%
Reliable Cork Lined.....60%
Western Pattern Cork Lined.....50%
Self-Measuring
Enterprise, ₱ doz $50.00.....20&10%
Lane's, ₱ doz $36.00.....25&10%
Victor, ₱ doz $36.00.....25&10%

Felloe Plates.....₱ ℔ 6@6½¢

Fifth Wheels.—
Derby and Cincinnati.....50&5%
Brewster.....55&5%

Files—
Domestic—
Nicholson Files, Rasps, &c.....60&10@60&10&5%
Nicholson (X. F.) Files.....25%
Nicholson's Royal Files (Seconds).....75% (extra prices on certain sizes)
Other makers, best brands....60&10@70%
Fair brands.....60&10&10@70&5%
Second quality.....70&10@75&10%
Nicholson's Horse Rasps....60&10@60& 10&5%
Heller's Horse Rasps.....50&7½@50&10%
McCaffrey's Horse Rasps.....50&10%
Chelsea Horse Rasps, Hand Cut...50&10%
Imported—
Moss & Gamble....List, April 1, 1883, 15%
Butcher.....Butcher's list, 20%
Stubs.....Stubs list, 25@30%
Turton's.....Turton's list, 20@25%
Greaves' Horse Rasps..American list, 6%

Fluting Machines—
Knox, 4½-inch Rolls.....$3.25 each } 35%
Knox, 6-inch Rolls.....$3.60 each }
Eagle, 3½-inch Roll, $2.15.....35%
Eagle, 5½-inch Roll, $2.85.....35%
Crown, 4½ in., $3.50; 6 in., $4.00; 8 in., $6.50 each.....35%
Crown Jewel, 6 in.....$3.50 each, 35%
American, 5 in., $3.00; 6 in., $3.40; 7 in., $4.50 each.....35%
Domestic Fluter.....each, $1.50
Geneva Hand Fluter, White Metal ₱ doz $12, 25%
Crown Hand Fluter, Nos. 1, $15.00; 2, $12.50; 3, $10.00.....30%
Shepard Hand Fluter, No. 85 ₱ doz $15.30.....40%
Shepard Hand Fluter, No. 110 ₱ doz $11.00.....40%
Shepard Hand Fluter, No. 95 ₱ doz $8.00.....40%
Clark's Hand Fluter.₱ doz $15.00.....35%
Combined Fluter and Sad Iron, ₱ doz $15.00.....30%
Buffalo.....₱ doz $10.00.....10%

Fluting Scissors—.....45%

Fodder Squeezers—
Blair's.....₱ doz $2.00
Blair's "Climax".....₱ doz $1.25

Forks—
Hay, Manure, &c., Asso List.....70%
Hay, Manure, &c., Phila. List 60@60&5%
Plated, see Spoons.

Freezers, Ice Cream—
Buffalo Champion.....65&65&5%
Shepard's Lightning.....65 @ 65&5%
White Mountain.....50&20&5%
New Arctic.....50&40&5%
American.....60%
Gem.....65%
Blizzard.....70%
Double Action Crown.....60%
Crown.....60%
Star.....60%
Peerless and Giant.....60&10%
Zero and Pet.....65&10%
Boss.....65&10&10%
Keystone, each, $1.50.....25%

Fruit and Jelly Presses—
Enterprise Mfg. Co.....20&10@30%
Henis.....₱ doz $2.50
Shepard's Queen City.....40%

Fry Pans—
Standard List:

No.	0	1	2	3	4
₱ doz.	$3.00	$3.75	$4.25	$4.75	$5.25
No.	5	6	7	8	
₱ doz.	$6.00	$7.00	$8.00	$9.00	

Polished, regular goods.....70&10 @ 75%
Acme Fry Pans.....60&10%

Fuse— ₱ 1000 ft
Common Hemp Fuse, for dry ground.$2.70
Common Cotton Fuse, for dry ground 2.85
Single Taped Fuse, for wet ground.. 4.25
Double Taped Fuse, for very wet gr. 5.40
Triple Taped Fuse, for very wet gr.. 6.50
Small Gutta Percha Fuse, for water. 7.50
Large Gutta Percha Fuse, for water.12.00

Gauges—
Marking, Mortise, &c.....60&10%
Starrett's Surface, Center and Scratch, 25&10%
Wire, low list.....10&10%
Wire, Wheeler, Madden & Co.....10%
Wire, Morse's.....50@50&5%
Wire, Brown & Sharpe's.....10@20%

Gimlets—
Nail and Spike.....50&10&5%
"Eureka" Gimlets.....40&10%
"Diamond" Gimlets.....₱ gr $5.00
Double Cut, Shepardson's.....45@45&5%
Double Cut, Ives'.....60@60&5%
Double Cut, Douglass'.....40&10%
"Bee," ₱ gr $12.....25@25&5%

Glue—
Le Page's Liquid.....25@25&5%
Upton's Liquid.....35%
Le Page & Co.'s Improved Process 25@25&5%

Glue Pots—
Tinned.....40%
Enameled.....40&5%
Family, Howe's "Eureka".....40%
Family, L. F. C.'s "Handy".....50%

Grindstones—
Small, at factory.....₱ ton $7.50@9.00

Grindstone Fixtures—
Sargent's Patent.....70&10%
Reading Hardware Co.....30&10%

Hack Saws.—
See Saws.

Halters—
Covert's, Rope, ½-in. Jute.....50&2%
Covert's, Rope, ½-in. Hemp.....50&2%
Covert's Adj. Rope Halters.....40&2%
Covert's Hemp Horse and Cattle Tie, 50&2%
Covert's Jute Horse and Cattle Ties, 60&10&2%

Hammers—
Handled Hammers—
Maydole's, list Dec. 1, '85.....25&10@35%
Buffalo Hammer Co.... } List Jan. 15, '87
Humason & Beckley... } 50@50&10%
Atha Tool Co..... }
Fayette R. Plumb.....40&10@50%
C. Hammond & Son..List, Oct., 1889, 50%
Verree.....5%
Magnetic Tack, Nos. 1, 2, 3, $1.25, 1.50 & 1.75.....30&10%
Nelson Tool Works.....40&10%
Warner & Nobles.....20@25
Peck, Stow & Wilcox.....40%
Sargent's.....33⅓&10%
Heavy Hammers and Sledges—
3 ℔ and under.....₱ ℔ 40¢
3 to 5 ℔.....₱ ℔ 36¢ } 70@70&10%
Over 5 ℔.....₱ ℔ 30¢ }
Wilkinson's Smiths.....10½¢@11¢ ₱ ℔

Handcuffs and Leg Irons—
R. I. Tool Co., Handcuffs, $15.00 ₱ doz 10%
R. I. Tool Co., Leg Irons, $25.00 ₱ doz 10%
Tower's.....25%
Daley's Improved Handcuffs: 2 Hands, Polished, ₱ doz $48.00; Nickeled, $57.00; 3 Hands, Polished, ₱ doz $72.00; Nickeled, $84.00.....25

Handles—
Iron, Wrought or Cast—
Door or Thumb.

Nos.	0	1	2	3	4
Per doz.	$0.90	1.00	1.18	1.35	1.50

60&10&10%
Roggin's Latches.....₱ doz 30¢@35¢
Bronze Iron Drop Latches..₱ doz 70¢ net
Jap'd Store Door Handles—Nuts, $1.02; Plate, $1.10; no Plate, $0.88.....net
Barn Door, ₱ doz $1.40.....10&10%
Chest and Lifting.....70%
Handles, Wood—
Saw and Plane.....40&10@40&10&5%
Hammer, Hatchet, Axe, Sledge, &c...40%
Brad Awl.....₱ gr $2.00
Hickory Firmer Chisel, ass'd.₱ gr 4.50
Hickory Firmer Chisel, large.₱ gr 5.00
Apple Firmer Chisel, ass'd...₱ gr 5.00
Apple Firmer Chisel, large...₱ gr 6.00
Socket Firmer Chisel, ass'd..₱ gr 3.00
Socket Framing Chisel, ass'd.₱ gr 5.00
J. S. Smith & Co.'s Pat File.....50%
File, assorted.....₱ gr 7.75 } 40@
Auger, assorted.....₱ gr 5.00 } 40&10%
Auger, large.....₱ gr 7.00 }
Pat. Auger, Ives'.....30&10%
Pat. Auger, Douglass'.....₱ set $1.25
Pat. Auger, Swan's.....₱ set $1.00
Hoe, Rake Shovel, c ... ... 50&10@

Cross-Cut Saw Handles—
Atkins' No. 1 Loop, ₱ pair, 28¢; No. 3, 18¢; No. 6, 16¢; No. 2 and No. 4 Reversible, 18¢.
Boynton's Loop Saw Handles, 50¢ . . . 60%
Champion . . . 15¢

Hangers—
Barn Door, old patterns . . . 60&10&10@70%
Barn Door, New England . . . 60&10&10@70%
Samson Steel Anti-Friction . . . 55%
Orleans Steel . . . 55%
Hamilton Wrought Wood Track . . . 55%
U. S. Wood Track . . . 65%
Champion . . . 60&10%
Rider and Wooster, Medina Mfg. Co.'s list . . . 70%
Climax Anti-Friction . . . 60%
Climax Anti-Friction for Wood Track . . . 55%
Zenith for Wood Track . . . 55%
Reed's Steel Arm . . . 50%
Challenge, Barn Door . . . 50%
Sterling's Imp'ved (Anti-Friction) . . . 65&10%
Victor, No. 1, $15.00; No. 2, $16.50; No. 3, $18.00 . . . 50&2%
Cheritree . . . 50&10%
Kidder's . . . 50&10@60%
The Boss . . . 60&10%
Best Anti-Friction . . . 60&10%
Duplex (Wood Track) . . . 60&10&5%
Terry's Pat., ₱ doz pr. 4 in, $10.00; 5 in. $12.00 . . . 50&10%
Terry's Steel Anti-Friction Leader 50&10%
Terry's Steel Anti-Friction Ideal . . . 50&10%
Cronk's Pat., No. 4, $12.00; No. 5, $14.40; No. 6, $18.00 . . . 50&15@60%
Wood Track Iron Clad, ₱ ft. 10¢ . . . 50 &15@60%
Carrier Steel Anti-Friction . . . 50&50&5%
Architect, ₱ set $6.00 . . . 20%
Eclipse . . . 20&10%
Felix, ₱ set $4.50 . . . 20%
Richards' . . . 30@30&10%
Lane's Steel Anti-Friction . . . 50%
Ball Bearing Door Hanger . . . 20&10@25&10%
Warner's Pat . . . 20@20&10%
Stearns' Anti-Friction . . . 20@20&10%
Stearns' Challenge . . . 25&10@25&10&10%
Faultless . . . 40@40&5%
American, ₱ set $6.00 . . . 20&10%
Rider & Wooster, No. 1, 62½¢; No. 2, 75¢ . . . 40%
Paragon, Nos. 1, 2 and 3 . . . 40&10%
Cincinnati . . . 25&10%
Paragon, Nos. 5, 5½, 7 and 8 . . . 20&10%
Crescent . . . 60@60&10%
Nickel, Cast Iron . . . 50%
Nickel, Malleable Iron and Steel . . . 40%
Scranton Anti-Friction Single Strap . . . 33⅓&5%
Scranton Anti-Friction Double Strap . . . 40%
Universal Anti-Friction . . . 40%
Wild West, 4 in. Wheel, $15.00; 5 in. Wheel, $21.00 . . . 45%
Star . . . 40&10@40&10&5%
May . . . 50&5@50&10%
Barry, $6.00 . . . 40&10%

Harness Snaps—
See Snaps.

Hatchets—
List Jan. 1, 1886.
Isaiah Blood . . . 35@40%
Hunt's Shingling, Lath and Claw . . . 40&5%
Hunt's Broad . . . 40%
Buffalo Hammer Co . . . 40&10@50%
Hurd's . . . 40&10@50%
Fayette R. Plumb . . . 40&10@50%
Wm. Mann, Jr., & Co . . . 50@50&5%
Underhill Edge Tool Co . . . 40&5@40&10%
Underhill's, Haines and Bright . . . 33⅓&5%
C. Hammond & Son . . . 40&10@50%
Simmons' . . . 40&10@50%
Peck's . . . 40&10@40&10&5%
Kelly's . . . 50@50&5%
Sargent & Co . . . 50%
Ten Eyck Edge Tool Co . . . 40&10@40&10&5%
Collins . . . 10%
Schulte, Lohoff & Co . . . 50@50&5%

Hay and Straw Knives—
Lightning. Mfrs'. price ₱ doz $18.00, 25% But jobbers cut this price freely.
Gem . . . ₱ doz $10
Wadsworth's . . . 40&7½@40&10%
Carter's Needle . . . ₱ doz $11.50@$12.00
Heath's . . . ₱ doz $13.50@14.00
Auburn Hay, Com. and Spear Point . . . 50%
Auburn, Straw . . . 40%
Nolin's Hay . . . ₱ doz $10.00

Hinges—
Wrought Iron Hinges
Strap and T . . . 70&10@75%
Screw Hook and Strap . . . 6 to 12 in., ₱ lb. 4 2-10¢; 14 to 20 in., ₱ lb. 3 7-10¢; 22 to 36 in., ₱ lb. 3 2-10¢
Heavy Welded Hook . . . 6 to 12 in., ₱ lb. 4 2-10¢; 14 to 20 in., ₱ lb. 3 7-10¢; 22 to 36 in., ₱ lb. 3 2-10¢
Screw Hook and Eye . . . ½ in., ₱ doz $1.50; ⅝ in., ₱ doz $2.45; ¾ in., ₱ doz $3.80 . . . 10%
Rolled Blind Hinges, Nos. 32 and 34 . . . 50&10%
Rolled Blind Hinges, Nos. 232 and 234 . . . 55&10%
Rolled Plate . . . 70&10%
Rolled Raised . . . 70&10%
Plate Hinges "Providence" . . . 8, 10 & 12 in., ₱ lb. . . . 5¢; over 12 in., ₱ lb. . . . 4¢
Spring Hinges—
Geer's Spring and Blank Butts . . . 40%
Union Spring Hinge Co.'s list, March, 1886 . . . 30%
Acme . . . 30%
U. S. . . . 25&10%
Empire and Crown . . . 20%
Hero and Monarch . . . 55%
American, Gem, and Star . . . 20%
Oxford . . . 20%
Barker's Double Acting . . . 20&10%
Union Mfg. Co . . . 25%
Bommer's . . . 30%
Buckman's . . . 15@20%
Chicago . . . 30%
Wiles' . . . 10%
Devore's . . . 40%
Rex . . . 40%
Royal . . . 60%
Reliable . . . 60%
Champion . . . 60%
Gate Hinges—
Western . . . ₱ doz $4.40, 60%
N. E. . . . ₱ doz $7.00, 55%
N. E. Reversible . . . ₱ doz $5.20, 55&10%
Clark's, Nos. 1, 2, 3 . . . 60&10&5%
N. Y. State . . . ₱ doz $5.00, 55&10%
Automatic . . . ₱ doz $12.50, 50%
Common Sense . . . ₱ doz pair $4.50, 50%
Seymour's . . . 45&10%
Shepard's . . . 60&10&5%
Reed's Latch and Hinges. ₱ doz $12.00, 50%
Blind Hinges—
Parker . . . 75&2%
Palmer . . . 50&5&10%
Seymour . . . 70&2%
Nicholson . . . 45&10%
Huffer . . . 50%
Clark's, Nos. 1, 3, 5, 40 and 50 . . . 75&10&5@80%
Clark's Mortise Gravity . . . 50%
Sargent's, Nos. 1, 3, 5, 11, 13 . . . 75&10@55&10&5%
Sargent's, No. 12 . . . 77&10&10%
Reading's Gravity . . . 75&10@75&10&5%
Shepard's
Noiseless . . . 75&10&5%
Niagara . . . 80&2½%
Buffalo . . . 80&5%
Clark's Genuine Pat . . . 80&5%
O. S., Lull & Porter . . . 75&10@80%
Acme, Lull & Porter . . . 75&5%
Queen City Reversible . . . 75%
Clark's Lull & Porter, Nos. 0, 1, 1½, 2, 2½, 3 . . . 75&10&2½%
North's Automatic Blind Fixtures, No. 2, for Wood, $10.50; No. 3, for Brick, $13.50 . . . 25&2%

Hoes—
Handled—
Garden, Mortar, &c . . . 70%
Planter's, Cotton, &c . . . 70%
Warren Hoe . . . 60%
Magic . . . ₱ doz $4.00
Eye—
D. & H. Scovil . . . 20%
Lane's Crescent Planters Pattern . . . 45&5%
Lane's Razor Blade, Scovil Pattern . . . 30%
Maynard, S. & O. Pat . . . 45&5%
Sandusky Tool Co., S. & O. Pat. 60&5@60&10%
Chattanooga Tool Co., S. & O. Pat. 60& 5@60&10%
Grub . . . 60@60&10%

Hog Rings and Ringers—
Hill's Improved Ringers . . . ₱ doz $4.25
Hill's Old Style Ringers . . . ₱ doz $2.75
Hill's Tongs . . . ₱ doz $4.50
Hill's Rings . . . ₱ doz bxs $2.15@2.25
Perfect Rings . . . ₱ doz bxs $1.60@1.70
Perfect Ringers . . . ₱ doz $2.15@$2.25
Blair's Hog Ringers . . . ₱ doz $2.25@2.50
Blair's Hog Rings . . . ₱ doz 96¢@$1.00
Champion Ringers . . . ₱ doz $2.00
Champion Rings, Double . . . ₱ doz $2.25
Brown's Ringers . . . ₱ doz $2.00
Brown's Rings . . . ₱ doz $1.25@1.50

Hoisting Apparatus—
Moore's Hand Hoist, with Lock Brake . . . 20%
Moore's Differential Pulley Block . . . 40%
Energy Mfg. Co's . . . 25%

Holders, File and Tool—
Balz Pat . . . ₱ doz $4.00; 25%
Nicholson File Holders . . . 20%

Hollow-Ware—
Iron—
Stove Hollow-Ware—
Ground . . . 55&5@60&5%
Unground . . . 65&10@65&10&5%
White Enameled-Ware—
Maslin Kettles . . . 60&10&10%
Boilers and Saucepans . . . 40&5%
Tinned Boilers and Saucepans . . . 40&5%
Gray Enameled-Ware—
Stove . . . 50%
Maslin Kettles . . . 60&10&10%
Boilers and Saucepans . . . 40&5%
Agate and Granite Ware, list Jan. 1, 1880 . . . 33⅓&10%
Rustless Hollow-Ware . . . 50@50&5%
Galvanized Tea-Kettles—

Inch	6	7	8	9
Each	55¢	60¢	65¢	75¢

Silver Plated—
4 mo. or 5 % cash in 30 days.
Reed & Barton . . . } 40&5%
Meriden Britannia Co . . . } 40&5%
Simpson, Hall, Miller & Co . . . } 40&5%
Rogers & Brother . . . } 40&5%
Hartford Silver Plate Co . . . } 40&5&5%
William Rogers Mfg. Co . . . } 40&5&5%

Hooks—
Cast Iron—
Bird Cage, Sargent's list . . . } 60&10&10%
Bird Cage, Reading . . . } 60&10&10%
Clothes Line, Sargent's list . . . } 60&10&10%
Clothes Line, Reading list . . . } 60&10&10%
Ceiling, Sargent's list . . . 55&10&10%
Harness, Reading list . . . 55&10@55&10&10%
Coat and Hat, Sargent's list . . . 55&10@60&10%
Coat and Hat, Reading . . . 55&10@60&10%
Wrought Iron—
Cotton . . . ₱ doz $1.25
Cotton Pat. (N.Y. Mallet & Handle W'ks) . . . 30%
Tassel and Picture (T. & S. Mfg. Co.) . . . 50%
Wrought Staples, Hooks, &c. See Wrought Goods.
Wire—
Wire Coat and Hat, Gem, list April, 1886 . . . 50%
Wire Coat and Hat, Miles', list April, 1886 . . . 50%
Indestructible Coat and Hat . . . 45%
Wire Coat and Hat, Standard . . . 45%
Belt . . . 80@80&10%
Miscellaneous.
Grass. No. 2, $2.00; No. 3, $2.25; No. 4, $2.50
Nolin's Grass . . . ₱ doz $2.25
Bush . . . 55@60%
Whiffletree—Patent . . . 55%
Hooks and Eyes—Malleable Iron . . . 70@70&10%
Hooks and Eyes—Brass . . . 60&10&10%
Fish Hooks, American . . . 50%
Bench Hooks . . . See Bench Stops.

Horse Nails—

Nos.	6	7	8	9	10
Ausable . . .	28¢	26¢	25¢	24¢	23¢.

25&10@25&10&10%

Clinton, Fin..	10½ @ 11¢, net				
Essex . . .	28¢	26¢	25¢	24¢	23¢.

25&10@25&10&10%

Lyra . . .	25¢	23¢	22¢	21¢	20¢.

40&10&5@50%

Snowden . . .	25¢	23¢	22¢	21¢	20¢.

40&10&5@50%

Putnam . . .	23¢	21¢	20¢	19¢	18¢.

1000 ℔ in year 15%

Vulcan . . .	23¢	21¢	20¢	19¢	18¢..12½&5%
Northwest'n.	25¢	23¢	22¢	21¢	20¢.

25@25&5%

Globe . . .	23¢	21¢	20¢	19¢	18¢..20&2½%
Boston . . .	23¢	21¢	20¢	19¢	18¢..30&2½%
A. C. . . .	25¢	23¢	22¢	21¢	20¢.

25&10@33⅓&5%

C. B.-K. . . .	25¢	23¢	22¢	21¢	20¢.

25&10@33⅓&5%

Champlain .	28¢	6¢	25¢	24¢	23¢.

25&10&10%

New Haven . .	28	26¢	25¢	24¢	23¢.

25&10@25&10&10%

Saranac . . .	23¢	21¢	20¢	19¢	18¢. . 30&10%
Champion . . .	25¢	23¢	22¢	21¢	20¢.

10&10&10%

Capewell . . .	28¢	26¢	5¢	24¢	23¢.

35&5@35&10%

Star . . .	23¢	21¢	19¢	18¢.

10&10&10@12½&5%

Anchor . . .	23¢	21¢	20¢	19¢	18¢ . . . 35%
Western . . .	23¢	21¢	20¢	19¢	18¢. . 40&10%

Empire Bronzed . . . 14 ₱ lb.

Horse Shoes—See Shoes Horse.

Hose, Rubber—
Competition . . . 75&10@75&10&5%
Standard . . . 70@70&10%
Extra . . . CC@60&10%
N. Y. B. & P. Co., Para . . . 90&10%
N. Y. B. & P. Co., Extra . . . 50%
N. Y. B. & P. Co., Dundee . . . 60&10&5%

Huskers—
Blair's Adjustable . . . ₱ gr $8.00
Blair's Adjustable Clipper . . . ₱ gr 7.00
Hubbard's Solid Steel . . . ₱ gr 4.50

Indurated Fiber-Ware—25%.
Spittoons, No. 2, ₱ doz . . . $9.00
Basins, Ringed, ₱ doz., No. 1, $4.80; No. 2, $4.20; No. 3 . . . $3.60
Washtubs, Nested, Nos. 0, 1, 2 and 3 (4 pieces), ₱ nest . . . $7.50
Keelers, Nested, Nos. 1, 2, 3 and 4 (4 pieces), ₱ nest . . . $3.70
Butter Bowls 15, 17 and 19-inch (3 pieces), ₱ nest . . . $2.25
Liquid Measures, pt., qt., 2 qt. and funnell (4 pieces) ₱ set . . . $4.00
Dry Measures, 1, 2, 4, 8 and 16 qts. (5 pieces), ₱ set . . . $3 00
See also *Pails.*

Jack Screws—See Screws.

Kettles— Spun. Stamped.
Brass, 7 to 17 in., ₱ lb . . . 24¢ 21 ¢
Brass larger than 17 in., ₱ lb . . . 26¢ 23½¢
Enameled and Tea Kettles. See *Hollow-Ware.*

Keys—
Lock Asso'n list Dec. 30, 1886 . . . 50&10@60&5%
Eagle, Cabinet, &c . . . 33⅓&2%
Hotchkiss' Brass Blanks . . . 40%
Hotchkiss, Copper and Tinned . . . 40%
Hotchkiss' Pad. and Cab . . . 35%
Ratchet Bed Keys . . . ₱ doz $4.00, 15%
Wollensak Tinned . . . 50&10%

Knife Sharpeners—
Parkin's.
Applewood Handles . . . ₱ doz $6.00, 40%
Rosewood or Cocobolo . ₱ doz $9.00, 40%

Knives—
Wilson's Butcher Knives . . . 25@30%
Ames' Butcher Knives . . . 25%
Foster Bros.' Butcher, &c . . . 40%
Nichols' Butcher Knives . . . 40&10%
Ames' Shoe Knives . . . 20@25%
Ames' Bread Knives . ₱ doz $1.50, 15@20%
Moran's Shoe and Bread . . . 20%
Hay and Straw . . . See Hay Knives.
Table and Pocket . . . See Cutlery.
Corn, Auburn Mfg. Co. Western Pat., $2.00
Corn, Auburn Mfg. Co. Crescent . . . $3.50

Knobs—
Door Mineral . . . 65@68%
Door Por. Jap'd . . . 75@78%
Door Por. Nickel . . . $2.00@2.25
Door Por. Plated, Nickel . . . $2.00@2.25
Drawer, Porcelain . . . 60&10@60&10&10%
Hemacite Door Knobs . . . 40&10@50%
Yale & Towne Wood, list Dec., 1885 . . . 40%
Furniture Plain . . . 75¢ gro inch, 10%
Furniture, Wood Screws . . . 25&10%
Base, Rubber Tip . . . 70&10&5%
Picture, Judd's . . . 50&10&10@70%
Picture, Sargent's . . . 70&10%
Picture, Hemacite . . . 35&5%
Shutter, Porcelain . . . 55&10%
Carriage, Jap . . . ₱ gro 80¢, 60&10%

Ladles.—
Melting, Sargent's . . . 55&10%
Melting, Reading . . . 35&10%
Melting, Monroe's Pat . . . ₱ doz $4.00, 40%
Melting, P. S. & W . . . 35&10@40%
Melting, Warner's . . . 30%

Lanterns—
Tubular—
Plain with Guards, ₱ doz . . . $4.00@4.25
Lift Wire, with Guards . . . $4.50@4.75
Square Plain, with Guards . . . $4.00@4.25
Sq. Lift Wire, with Guards . . . $4.25@4.50
Without Guards, 25¢ ₱ doz less.
Miscellaneous.
Police, Small, $6.00; Medium, $7.25; Large, $9.75 . . . 20@25%

Lawn Mowers—
Standard List . . . 50&10%
Quaker City . . . 60&10%
Enterprise . . . 60&10%

Lemon Squeezers—
Porcelain Lined, No. 1 . . . ₱ doz $6.00, 25&30%
Wood, No. 2 . . . ₱ doz $3.00, 35%
Wood, Common . . . ₱ doz $1.70@1.75
Dunlap's Improved . . . ₱ doz $3.75, 20%
Sammis . . . No. 1, $5.00; No. 2, $9; 12, $18 ₱ doz . . . 25&10%
Jennings' Star . . . ₱ doz $2.50
The Boss . . . ₱ doz $2.50
Dean's . . Nos. 1, ₱ doz $6.50; 2, $3.35; 3, $1.90
Little Giant . . . 50@50&5%
King . . . 40&5%
Hotchkiss Straight Flash . . . ₱ doz $12.00

Lines—
Cotton and Linen Fish, Draper's . . . 50%
Draper's Chalk . . . 60%
Draper's Masons' Linen, 84 ft., No. 1, $1.25; No. 2, $1.75; No. 3, $2.25; No. 4, $2.75; No. 5, $3.25 . . . 25%
Cotton Chalk . . . 55%
Samson, Cotton, No. 4, $2; No. 4½, $2.50; 10%
Silver Lake, Braided, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ₱ gro . . . 25%
Mason's Linen, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50.
Mason's Colored Cotton . . . 45%
Wire Clothes . . Nos. 1P 7P 20
$4 00 $3 50 $3.00
Ventilator Cord, Samson Braided, White or Drab Cotton . . ₱ doz $7.50, 20%

Locks, &c.—
Door Locks, Latches, &c.
R. & E. Mfg. Co., list Mar. 20, 1889 . . . } 60&10@60 &10&10%
Mallory, Wheeler & Co., list July, '88 . . . } Much lower net
Sargent & Co., list Aug. 1, '88 . . . } prices
Reading Hardware Co., list Feb. 2, '88 . . . } often made.
Perkins' Burglar Proof . . . 60&25%
Plate . . . 33⅓&2%
F. Many's "Extension Cylinder" $10.50 ₱ doz.
Barnes Mfg. Co . . . 40@40&10%
Yale . . . net prices
Deitz Flat Key . . . 30%
L. & C. Round Key Latches . . . 30&10%
L. & C. Flat Key Latches . . . 33⅓&10%
Romer's Night Latches . . . 15%
Shepardson or U. S . . . 35%
Felter or American . . . 40&10%
Seed's N. Y. Hasp Lock . . . 25%
Cabinet—
Eagle, Gaylord Parker and Corbin . . . } List March, '84, rev Jan. 1, '85 . . . 33⅓&2%
Deitz, Nos. 36 to 39 . . . 40%
Deitz, Nos. 51 to 63 . . . 40&10%
Deitz, Nos. 86 to 96 . . . 30%
Stoddard Lock Co . . . 30&35%
"Champion" Night Latches . . . 40%
Barnes Mfg. Co . . . 40@40&10%
Eagle and Corbin Trunk . . . 25&2%
"Champion" Cab. and Combin . . . 33⅓%
Yale . . . net prices
Romer's . . . 25%
Padlocks—
List Dec. 23, '84 . . . 75@75&10%
Yale Lock Mfg. Co.'s . . . net prices
Eagle . . . 25&2%
Eureka, Eagle Lock Co . . . 40&2%
Romer's, Nos. 0 to 91 . . . 30%
Romer's Scandinavian, &c., Nos. 100 to 505 . . . 15%
A. E. Deitz . . . 40%
Champon Padlocks . . . 40%
Hotchkiss . . . 30%
Star . . . 45%
Horseshoe . . . ₱ doz, $9. 40@40&10%
Barnes Mfg. Co . . . 40@40&10%
Nock's . . . 30%
Brown's Pat . . . 25%
Scandinavian . . . 90@90&10%
E. T. Fraim's Keystone Scandavian: Nos. 119, 120, 130 and 140 . . . 90&10% Other Nos . . . 65%
Ames Sword Co. up to No. 150 . . . 40%
Ames Sword Co. above No. 150 . . . 50%

Lumber Tools.
Ring Peavies, "Blue Line" . . . ₱ doz $20.00
Ring Peavies, Common . . . ₱ doz $18.00
Steel Socket Peavies . . . ₱ doz $21.00
Mall. Iron Socket Peavies . . . ₱ doz $19.00
Cant Hooks, "Blue Line" . . . ₱ doz $16.00
Cant Hooks, Common Finish . . ₱ doz $14.00
Cant Hooks, Mall. Socket Clasp, "Blue Line" Finish . . . $16.00
Cant Hooks, Mall. Socket Clasp, Common Finish . . . ₱ doz $14.50
Cant Hooks, Clip Clasp, "Blue Line" Finish . . . ₱ doz $14.00
Cant Hooks, Clip Clasp, Common Finish . . . ₱ doz $12.00
Hand Spikes . . . ₱ doz 6 ft., $15.00; 8 ft., $20.00
Pike Poles, Pike & Hook, ₱ doz., 12 ft., $11.50; 14 ft., $12.50; 16 ft., $14.50; 18 ft., $17.50; 20 ft., $21.50.
Pike Poles, Pike only, ₱ doz, 12 ft., $10.00; 14 ft., $11.00; 16 ft., $13.00; 18 ft., $16.00; 20 ft., $20.00.
Pike Poles, not ironed, ₱ doz. 12 ft. $6.00; 14 ft., $7.00; 16 ft., $9.00; 18 ft., $12.00; 20 ft., $16.00.
Setting Poles, ₱ doz. 12 ft., $14.00; 14 ft., $15.00; 16 ft., $17.00
Swamp Hooks . . . ₱ doz $18.00

Lustro—
Four-ounce Bottles . . . ₱ doz, $1.75; ₱ gross . . . $17.00

Mallets—

Hickory . . .	20&10@20&10&10%
Lignumvitæ . . .	20&10@20&10&10%

B. & L. Block Co., Hickory & L. V. 30@30&10%

Match Safes—
Dangerfield's Self-Igniting . . . ₱ doz $1.50

Mattocks. Regular list . . . 60&5%

Measures—
Standard Fiberware, No. 1, peck, ₱ dozen, $4; ½-peck, $3.50.

Meat Cutters—
Dixon's ₱ doz . . . 40&5%

Nos. . . .	1	2	3
	$14.00	$17.00	$20.00

Woodruff's ₱ doz . . . 40&5%

Nos. . . .	100	150
	$15.00	$18.00

Champion ₱ doz . . . 40&45%

Nos. . . .	200	300	400
	$22.00	$27.00	$40.00

Hales Pattern ₱ doz . . . 70@70&5%

Nos. . . .	11	12	13
	$27.00	$33.00	$45.00

American . . . 30%

Nos. . . .	1	2	3	4	B	5
Each . . .	$5	$7	$10	$25	$50	$60

Enterprise . . . 30%

Nos. . . .	10	12	22	32	42
Each . . .	$3	$2.50	$4	$6	$15

Pennsylvania . . . 40&10%

Nos. . . .	1	2	3	00
	$24.00	$28.00	$36.00	$28.00

Miles' Challenge ₱ doz . . . 45@45&10%

Nos. . . .	1	2
	$22.00	$30.00 $40.00

Home No. 1 . . . ₱ doz, $26.00, 55&10%
Draw Cut, each:

Nos. . . .	5	2	6	8
	$50	$75	$80	$225

. . . 20@25%
Beef Shavers (Enterprise) . . . 20&10@30%
Chadborn's Smoked Beef Cutter. ₱ doz $66.00

Mincing Knives—
Am. (2d quality, ₱ gr., 1 blade blades, $12; 3 blades, $18 . . . net
Lothrop's . . . 20&10%
Smith's, ₱ doz, Single, $2.00; Double, $3 . . . 40@45%
Knapp & Cowles . . . 50&10@60%
Buffalo Adjustable . . . ₱ doz $3.00, 25%
Buffalo Double Adj'table. ₱ doz $3.00 25%

Molasses Gates—
Stebbin's Pattern..... 75@75&10%
Stebbin's Genuine.....60&10&10%
Stebbin's Tinned Ends.....40&10%
Chase's Hard Metal.....50&10%
Bush's.....20%
Lincoln's Pattern.....70&70&10
Weed's.....20&10%
Boss, ₱ doz:
Nos. 1, $7; No. 2, $8; No. 3, $9; No. 4 $10.....60&10&10%

Money Drawers....₱ doz, $18@$20

Muzzles—
Safety.....₱ doz, $3.00, 25 %

Nails, see Trade Report.
Wire Nails, Papered.
Association list, July 15, 1889....70&5%
Tack Mfrs.' list.....60&10&10%
Wire Nails, Standard Penny.
Card June 1, '89, base.....$3.00 @ $3.10

Nail Puller—
Curtiss Hammer.....₱ doz $9.00
Giant, No. 1.....₱ doz. $18.00, 10%
Giant, No. 2.....₱ doz, $15.00, 10%
Pelican.....₱ doz, $9.00, 25%

Nail Sets—
Square.....₱ gr., $4.00@$4.25
Round.....₱ gr. $3.25
Cannon's Diamond Point...₱ gr.,$12, 20%

Nut Crackers—
Table (H. & B. Mfg. Co.).....40%
Blake's Pattern..... ₱ doz $2.00, 10%
Turner & Seymour Mfg. Co..... ..... 50%

Nuts—

uts', off list Jan. 1, 1888:	Square.	Hex.
Hot Pressed	5.1¢	5.8¢
Cold Punched	5.1¢	5.4¢

In lots less than 100 ℔, ₱ ℔, add ⅛¢; 1-lb boxes, add 1¢ to list.

Oakum—
Government.....₱ ℔ 7¼@7¾¢
U. S. Navy.....₱ ℔ 6¾@6¾¢
Navy.....₱ ℔ 5½@5¾¢

Oilers—
Zinc and Tin .....65@65&10%
Brass and Copper .....50&10&50&10&5%
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4.00; No. 3, $4.40 ₱ doz. 10&10&5%
Malleable, Hammers, Old Pattern, same list 40%
Prior's Pat. or "Paragon" Zinc, 60&10&10%
Prior's Pat. or "Paragon" Brass.....50%
Olmstead's Tin and Zinc.....60%
Olmstead's Brass and Copper 50%
Broughton's Zinc.....60%
Broughton's Brass 50%
Gem P. D. & Co.....₱ gro. $2

Packing, Steam—
Rubber—
Standard .....60&10@60&10&10%
Extra .....50&10@60%
N. Y. B. & P. Co., Standard ...50&10&5%
N. Y. B. & P. Co., Empire 70%
N. Y. B. & P. Co., Salamander. ₱ ℔ 65¢, 30%
Jenkins' Standard..... ....₱ ℔ 80¢, 35%
Miscellaneous—
American Packing.....10¢@11¢ ₱ ℔
Russia Packing .....14¢ ₱ ℔
Italian Packing .....13¢@14¢ ₱ ℔
Cotton Packing .....15¢@17¢ ₱ ℔
Jute.....7¢@8¢ ₱ ℔

Padlocks—
See Locks.

Pails—
Galvanized Iron—See Trade Report

Quarts	10	12	14
Hill's Light Weight, ₱ doz.	$2.75	3.00	3.25
Hill's Heavy Weight, ₱ ds.	3.00	3.25	3.75
Whiting's	2.75	3.00	3.25
Sidney Shephard & Co.	2.94	3.15	3.27
Iron Clad	2.50	2.75	3.00
Fire Buckets	2.75	3.25	3.50

Buckets, see Well Buckets.
Indurated Fibre Ware—25%
Star Pails, 12 qt .....₱ doz $6.00
Fire, Stable and Milk, 14 qt ..₱ doz $7.80
Standard Fibre Ware—

	Plain.	Decr'd
Water Pails, 12 qt., per doz.	$4.00	$4.50
Dairy Pails, 14 qt., per doz.	4.50	5.00
Fire Pails, No. 1, 12 qt. per doz	4.50	
Fire Pails, No. 2, 14 qt. per doz	5.00	
Sugar Pails	6.00	6.50
Horse Pails	5.00	
Buggy Pails	4.00	
Slop Jars (bal. trap)	8.00	9.00
Chamber Pails, 14-qt	6.50	7.50

Pencils—
Faber's Carpenters'..... ..high list 50%
Faber's Round Gilt.....₱ gro $5.25
Dixon's Lead..... ₱ gro $4.50
Dixon's Lumber.....₱ gro $6.75
Dixon's Carpenters' ....40&10%

Picks—
Railroad or Adze Eye, 5 to 6, $12.00; 6 to 7, $13.00.....60 @ 60&5%

Picture Nails—
Brass Head, Sargent's list.....50&10&10%
Brass Head, Combination list.....50&10%
Porcelain Head, Sargent's list.50&10&10%
Porcelain Head, Combination list..40&10%
Niles' Patent.....40%

Pinking Irons— ₱ doz 65¢ net

Pipe, Wrought Iron—
List September 18, 1889.
1¼ and under, Plain 50%
1¼ and under, Galvanized 42½%
1½ and over, Plain.....62½%
1½ and over, Galvanized 50%
Boiler Tubes, Iron.
1¼ and under..... .....50%
2 in. and larger..... .....55%

Planes and Plane Irons—
Wood Planes—
Molding..... .....50&10&2%
Bench, First Quality.. .....55&10&2%
Bench, Second Quality.....60&10&2%
Bailey's (Stanley R. & L. Co.).....40&10%
Iron Planes—
Bailey's (Stanley R. & L. Co.).....40&10%
Miscellaneous Planes (Stanley R. & L. Co.) .....20&10%
Victor Planes (Stanley R. & L. Co.).20&10%
Steer's Iron Planes..... .....35@35&5%
Meriden Mal. Iron Co.'s.30&10@30&10&10%
Davis's Iron Planes ...30&10@30&10&10%
Birmingham Plane Co.....50@50&5%
Gage Tool Co.'s Self-Setting.....20&10%
Chaplin's Iron Planes .....40@40&5%
Sargent's ... 30&10@30&10&10%
Plane Irons—
Plane Irons .....20&10%
Plane Irons, Butcher's...$5.00@$5.25 to £
Plane Irons, Buck Bros 30%
Plane Irons, Auburn Tool Co., "Thistle" 35%
Sandusky Tool Co.:
Single and Cut.....30%
Double 40%
L. & I. J. White.....25%

Pliers and Nippers—
Button's Patent.....30&10@40%
Hall's No. 2, 5 in., $13.50; No. 4, 7 in. $21.00 ₱ doz .....20&10@33⅓%
Humason & Beckley Mfg. Co..50@50&10%
Gas Pliers.....60%
Gas Pliers, Custar's Nickel Plated..60&5%
Eureka Pliers and Nippers 40%
Russell's Parallel.....25%
P. S. & W. Cast Steel 50%
P. S. & W. Tinners' Cutting Nippers, add 6% dis 10%
Carew's Pat. Wire Cutters.....20%
Morrill's Parallel, ₱ doz, $12.00....30&5%
Cronk's 8 in., $15.00; 10 in. $21.00, 40@40&5%

Plumbs and Levels—
Regular List .....70&10@70&10&10%
Disston's.....45&10%
Pocket Levels.....70&10@70&10&10%
Davis Iron Levels.....30%
Davis' Inclinometers ....10&10%

Polish, Metal.
Prestoline.....20&10%
Prestoline Paste 33⅓%
Gaston's Silver Compound.....33⅓%

Pokes, Animal—
Bishop's I. X. L.....₱ doz $6.50
Bishop's O. K..... .....₱ doz $5.50
Bishop's Pioneer.....₱ doz $3.75
Bishop's American.... .....₱ doz $3.00

Poppers, Corn—
Round or Square, 1 qt..₱ gr $10.00@10.50
Round or Square, 1½ qt ..₱ gr $15@15.50
Round or Square, 2 qt..₱ gr $18.50@19.00

Post Hole and Tree Augers and Diggers—
Samson Post Hole Digger, ₱ doz $36.00. 25&10%
Fletcher Post Hole Augers, ₱ doz $36, 20%
Eureka Diggers . .....₱ doz $16.00@17.00
Leed's .....₱ doz $8.00@9.00
Vaughan's Post Hole Auger, ₱ doz $13.00@14.00
Kohler's Little Giant .....₱ doz $18.00
Kohler's Hercules .....₱ doz $15.00
Kohler's New Champion.....₱ doz $9.00
Schneidler.....₱ doz $18.00
Ryan's Post Hole Diggers...₱ doz $24.00
Cronk's Post Bars, ₱ doz $60.00, 50&5&50&10%
Gibbs Post Hole Digger, ₱ doz $30.00, 50%
Imperial, ₱ doz, $15.....45%

Potato Parers—
White Mountain .....₱ doz $5.00@5.50
Antrim Combination.....₱ doz $8.00
Hoosier.....₱ doz $13.50

Pruning Hooks and Shears—
Disston's Combined Pruning Hook and Saw .....₱ doz $18.00, 20&10%
Disston's Pruning Hook, ₱ doz $12.00, 20&10%
E. S. Lee & Co.'s Pruning Tools.....40%
Pruning Shears, Henry's Pat, ₱ doz $3.75@4.00 net
Henry's Pruning Shears, ₱ doz $4.25@ 4.50 net
Wheeler, M. & C. Co.'s Combination. ₱ doz $12.00, 20%
Dunlap's Saw and Chisel, ₱ doz $8.50, 30%
J. Mallinson & Co., No. 1, $5.25; No. 2, 7.25

Pulleys—
Hot House, Awning, &c.....60&10%
Japanned Screw... .... 60&10%
Brass Screw.....60&10%
Japanned Side.....66⅔&10%
Japanned Clothes Line.... .....60&10%
Empire Sash Pulley ..... 55@60%
Moore's Sash, Anti-Friction.....50%
Hay Fork, Solid Eye, $4.00; Swivel, $4.50..... .....50&10@50&10&5%
Hay Fork, "Anti-Friction," 5 in. Solid, $5.70 .....50%
Hay Fork, "F" Common and Pat. Bushed 20%
Hay Fork, Tarbox Pat. Iron.....20%
Hay Fork, Reed's Self-Lubricating ...60%
Shade Rack 45%
Tackle Blocks.....See Blocks
Moore's Anti-Friction 5 in. Wheel, ₱ doz $12.00. .....40%

Pumps—
Cistern, Best Makers .....60@60&10%
Pitcher Spout, Best Makers....67½@70%
Pitcher Spout, Cheaper Goods.70@70&5%

Punches—
Saddlers' or Drive, good, ₱ doz...60@65¢
Bemis & Call Co.'s Cast Steel Drive..50&5%
Bemis & Call Co.'s Springfield Socket.50&5%
Spring, good quality....₱ doz $2.50@2.60
Spring, Leach's Pat. 15%
Bemis & Call Co.'s Spring and Check .40%
Solid Tinners' ..... ₱ doz $1.44, 55%
Tinners' Hollow Punches.....20&2%
Rice Hand Punches 15%
Avery's Revolving.....40%
Avery's Saw-Set and Punch. See Saw Sets.

Rail—
Sliding Door, Wr't Brass, ₱ ft 35¢.....15%
Sliding Door, Bronzed Wr't Iron.. ₱ ft. 7¢
Sliding Door, Iron, Painted, ₱ foot 4¢, 40%
Barn Door, Light, 1in. ⅝ ¾ ⅞
Per 100 feet.....$2.00 2.50 3.10, 10%
B. D. for N. E. Hangers—

	Small.	Med.	Large.
Per 100 feet	$2.15	2.70	3.25..net

Terry's Steel Rail, ₱ foot.....4½¢
Victor Track Rail, 7¢ ₱ foot.....50&2%
Carrier Steel Rail, ₱ foot .....4½¢
Moore's Wrought Iron.....25%

Rakes—
Cast Steel, Association goods 70%
Cast Steel, outside goods.....60&10&70%
Malleable.....70&70&5%
Gibbs Lawn Rake.....$12.00, 50&15%
Canton Lawn Rake.....$9.00, 50&10%
Ft. Madison Prize Bow Brace and Peerless 65%
Fort Madison Steel Tooth Lawn Rake, $6.00..... .....25%

Razors—
J. R. Torrey Razor Co 20%
Wostenholme and Butcher, $10.00 to £, 10%
Jordan's AA1, list Nov. 1, 1889.....50%
Jordan's Old Faithful, list Nov. 1, '89..50%

Razor Strops—
Genuine Emerson.....60@60&5%
Imitation " .....₱ doz $2.00, 20&10&5%
Torrey's 20%
Badger's Belt and Com.....₱ doz $2.00
Lamont Combination.....₱ doz $4.00
Jordan's Pat Padded, list Nov. 1, '89..50%

Rivets and Burrs—
Iron, list Nov. 17, '87..... .....40%
Copper.....50@50&10%

Rivet Sets..... .....50&10%

Rods—
Stair, Brass .....25&2%
Stair, Black Walnut .. .. ₱ doz 40¢

Rollers—
Barn Door, Sargent's list .....60&10&10%
Acme Moore's Anti-Friction.....55%
Union Barn Door Roller 70%

Rope—
Manufacturers' prices:
Manila...½ in. and larger ₱ ℔ 14½¢
Manila . .....⅜ in. ₱ ℔ 14¾¢
Manila.....¼ and 5-16 in. ₱ ℔ 15 ¢
Manila Tarred Rope.....₱ ℔ 13¾¢
Manila, Hay Rope.....₱ ℔ 14¼¢
Sisal...½ inch and larger ₱ ℔ 11 ¢
Sisal.....⅜ in. ₱ ℔ 11¼¢
Sisal.....¼ and 5-16 in. ₱ ℔ 11¾¢
Sisal, Hay Rope.....₱ ℔ 11 ¢
Sisal, Tarred Rope.....₱ ℔ 10¼¢
Sisal, Medium Lathe Yarn.₱ ℔ 10 ¢
Cotton Rope .....₱ ℔ 15@18¢ net
Jute Rope..... ₱ ℔ 7½¢
1½% for cash in 10 days.

Rules—
Boxwood..... .80&10&10@80&10&10&5%
Ivory.....50@50&10%
Starrett's Rules and Straight Edges, Steel..... .....25&10%

Sad Irons—
From 4 to 10, at factory ...₱ 100 ℔, $2.60@$2.75
Self-Heating.....₱ doz $9.00 net
Self-Heating, Tailors'.....₱ doz $18.00 net
Gleason's Shield and Toilet. 25%
Mrs. Pott's Irons..... .....40@40&10%
Enterprise Star Irons 40%
Combined Fluter and Sad Iron, ₱ doz, $15.00 .....15%
Fox Reversible, Self-Fluter ₱ doz $24.00
Chinese Laundry (N.E. Butt Co.) 8½¢, 15%
New England.....5¢, 15%
Mahony's Troy Pol. Irons.....25%
Sensible.....20@20&5%
National Self-Heating..... .....30 %

Sand and Emery Paper and Cloth—
List April 19, 1886..... .....50@50&10%
Sibley's Emery and Crocus Cloth.....30%

Sash Cord—
Common.....₱ ℔, 10@11¢
Patent, good quality .....₱ ℔ 13@13½¢
White Cotton Braided, fair..₱ ℔ 28@29¢
Common Russia Sash.....₱ ℔ 13½¢
Patent " .....₱ ℔ 15¢
Cable Laid Italian Sash.....₱ ℔ 22¢@23¢
India Cable Laid " .....₱ ℔ 13¢
Silver Lake—
A Quality, White, 50¢.....10&10&5%
A Quality, Drab, 55¢.....10&10&5%
B Quality, White, 50¢.....20&10&5%
B Quality, Drab, 55¢.....20&10&5%
C Quality, White (only).....26½¢@28¢
Sylvan Spring, Extra Braided, White, 34¢
Sylvan Spring, Extra Braided, Drab..30¢
Semper Idem, Braided, White.....30¢
Egyptian, India Hemp, Braided.....25¢
Samson—
Braided, White Cotton, 50¢..30@30&5%
Braided, Drab Cotton, 55¢...30@30&5%
Braided, Italian Hemp, 55¢..30@30&5%
Braided, Linen, 80¢.....30@30&5%

Sash Locks—
Clark's, No. 1, $10; No. 2, $8 ₱ gr. .33⅓%
Ferguson's 33⅓%
Morris and Triumph, list Aug. 16, 1886, 60&2%
Victor.....60&10&2%
Walker's.....10%
Attwell Mfg. Co.....25&33⅓%
Reading.....66⅔&10@66⅔&10&10%
Hammond's Window Springs.....40%
Common Sense, Jap'd, Cop'd and Br'zed .....₱ gr $4.00
Common Sense, Nickel Plated ₱ gr $10.00
Universal..... .....30%
Kempshall's Gravity.....60%
Kempshall's Model .....60@60&10%
Corbin's Daisy, list Feb. 15, 1886....70%
Payson's Perfect.....60@60&10%
Hugunin's Sash Balances.....25&5&2%
Hugunin's New Sash Locks.....25&5&2%
Stoddard "Practical". 10%
Ives' Patent.....60@60&10%
Liesche's, Nos. 100 and 110, ₱ gr $8; 105, $10.00. .....20&10%
Davis, Bronze, Barnes Mfg. Co.....50%
Champion Safety, list March 1, 1888 55@55&5%
Security..... .....70%
Buckeye.....₱ gro $4.80

Sash Weights—
Solid Eyes.....₱ ton $22.00

Sausage Stuffers or Fillers—
Miles' "Challenge," ₱ doz $20, 50@50&5%
Perry ....₱ doz, No. 1, $15.00; No. 0, $21.00.....50&5@50&10%
Draw Cut No. 4, each $30.00.....20%
Enterprise Mfg. Co..... .....20&10@30%
Silver's.....40&10%

Saws—
Disston's Circular.....45@45&5% } Extras sometimes given by jobbers.
Disston's Cross Cuts.....45@45&5%
Disston's Hand 25@25&5%
Atkins' Circular Shingle and Heading 50&10%
Atkins' Silver Steel Diamond X Cuts ₱ foot 70¢
Atkins' Special Steel Dexter X Cuts ₱ foot 50¢
Atkins' Special Steel Diamond X Cuts ₱ foot 30¢
Atkins' Champion and Electric Tooth X Cuts..... .....₱ foot 24@25¢
Atkins' Hollow Back X Cuts. .₱ foot 18¢
Atkins' Mulay, Mill and Drag....40&10%
Atkins' One-Man Saw, with handles, ₱ foot 32¢
W. M. & C., Hand.....30&5@30&10%
W. M. & C., Champion X Cuts, Regular.....₱ foot 24@26¢
W. M. & C. X Cuts, Thin Back. ₱ foot 27@29¢
Peace Circular and Mill..... .....45&10%
Peace Hand Panel and Rip 20&10@20&10&10%
Peace Cross Cuts, Standard... ₱ foot 25¢
Peace Cross Cuts, Thin Back ₱ foot 27@28¢
Richardson's Circular and Mill 45@45&10%
Richardson's X Cuts, No. 1, 30¢; No. 2, 27¢; No. 3, 24¢
Hack Saws—
Griffin's, complete. .....40&10@50%
Griffin's Hack Saw, Blades....40&10@50%
Star Hack Saws and Blades.....25%
Diamond Hack Saws and Blades.....25%
Eureka and Crescent.....25%

Saw Frames—
White Vermont.....₱ gro $9.00@10.00
Red, Polished and Varnished.....₱ doz $1.50, 25%

Saw Sets—
Stillman's Genuine...₱ doz $5.00@7.75, 40&5%
Stillman's Imita.....₱ doz $3.25@5.25, 40&5&40&10%
Common Lever.....₱ doz $2.00, 40&5%
Morrill's No. 1, $15.00; Nos. 3&4, $24.00, 40&10&50%
Leach's...No. 0, $8.00; No. 1, $15, 15&20%
Nash's.....20&10@20&10&10%
Hammer, Hotchkiss.....$5.50, 10%
Hammer, Bemis & Call Co.'s new Pat. 30&5%
Bemis & Call Co.'s Lever and Spring Hammer.....30&5%
Bemis & Call Co.'s Plate.....10%
Bemis & Call Co.'s Cross Cut 12½%
Aiken's Genuine.....$13.00, 50&10%
Aiken's Imitation. .....$7.00, 55&5%
Hart's Pat. Lever.....20%
Disston's Star, #9, No., 15, $5.50; 20& 10@20&10@10%
Atkin's Lever, ₱ doz No. 1, $6.00; No. 2, $9.60
Atkin's Criterion.....₱ doz $7.50
Croissant (Keller), No. 1, $15.00; No. 2, $24.00..... .....40&10%
Avery's Saw Set and Punch 50%
Am. Tool Co.'s Superior.....₱ doz $15,50%

Saw Tools—
Atkins' Perfection.....₱ doz $15.00
Atkins' Excelsior.....₱ doz $6.00
Atkins' Giant ....₱ doz $4.00

Scales—
Hatch, Counter, No. 171, good quality, ₱ doz $21.00
Hatch, Tea, No. 161....₱ doz $6.75@$7.00
Union Platform, Plain.....$2.10@2.20
Union Platform, Striped.....$2.20@2.30
Chatillon's Grocers' Trip Scales 50%
Chatillon's Eureka.....25%
Chatillon's Favorite.....40%
Family, Turnbulls.....30@30&10%
Riehle bros.' Platform..... .....40%

Scale Beams—
Scale Beams, List Jan. 12, '82...50&10@ 50&10&5%
Chatillon's No. 1..... .....40%
Chatillon's No. 2..... .....50%

Scrapers—
Adjustable Box Scraper (S. R. & L. Co.) $6.50..... .....30&10%
Box, 1 Handle.....₱ doz $4.00, 10%
Box, 2 Handle.....₱ doz $6.00, 10%
Defiance Box and Ship..... .....20&10%
Foot..... .....50&10@60%
Ship, Common ....₱ doz $3.50 net
Ship, R. I. Tool Co..... .....10%

Screen Window and Door Frames—
Porter's Pat. Window and Door Frame. 33⅓&10%
Warner's Screen Corner Irons...33⅓&@ 33⅓&10%
Stearns' Frames and Corners.25@25&10%

Screw Drivers—
Douglas Mfg. Co..... .....20&10&10%
Disston's..... .....45&10%
Disston's Pat. Excelsior..... 45&10%
Buck Bros..... .....30%
Stanley R. & L. Co.'s Varnished Handles.....65&10%
Black Handles. ....60&10%
Sargent & Co.'s No. 1 Forged Blade.....60&10&10%
Nos. 20, 30 and 60.....60⅔&10&10%
Knapp & Cowles' No. 1.....60&20&70%
No. 1 Extra.....60@60&10%
Nos. 60 & 4.....50&5@50&10&5%
Stearns'.....25&10&5%
Gay & Parsons..... .....35%
Champion.....25&10%
Clark's Pat.....30@33⅓%
Crawford's Adjustable.....30%
Ellrich's Socket and Ratchet..25@25&10%
Allard's Spiral, new list..... .....25%
Kolb's Common Sense ₱ doz $6.00,25&10%
Syracuse Screw-Driver Bits....30&30&5%
Screw Driver Bits..... .....₱ doz 50¢75¢
Screw-Driver Bits, Parr's.....₱ gro $6.25
Fray's Hol. Hdle. Sets.No. 3, $12.00, 25@25&10%
P. D. & Co.'s all Steel..... .....50%
Cincinnati.....20&10%
Brace Screw-Drivers.....25&10
Buck Bros.' Screw-Driver Bits.....30%

Screws—
Wood Screws—List March 1, 1889

Flat Head Iron.....50%	Extra 5 @ 10 % often giv
Round Head Iron....40%	
Flat Head Brass.....45%	
Round Head Brass...55%	
Flat Head Bronze....45%	
Round Head Bronze.35%	

Machine—
Flat Head, Iron.....55%
Round Head, Iron.....50%
Bench and Hand—
Bench, Iron.....55&10@55&10&10%
Bench, Wood, Beech.....₩ doz $2.25
Bench, Wood, Hickory.....20&10%
Hand, Wood.....25&10@25&10&5%
Lag, Blunt Point, according to size.....75&10@80%
Coach and Lag, Gimlet Point.....75%
Bed.....25&5%
Hand Rail, Sargent's.....60%&10%
Hand Rail, H. & B. Mfg. Co...70&10@75%
Hand Rail, Am. Screw Co.....75%
Jack Screws, Millers Falls list..50@50&5%
Jack Screws, P. S. & W.....35%
Jack Screws, Sargent...60&10@60&10&5%
Jack Screws Stearns'.....40@40&10%

Scroll Saws—
Lester, complete, $10.00.....25%
Rogers, complete, $4.00.....25%
Barnes' Builders' and Cabinet Makers', $15.....25%
Barnes' Scroll Saw Blades.....35%

Scythe Snaths..50&5@50&10@25%

Shears—
American (Cast) Iron...75&10@75&10&5%
Pruning...See Pruing Hooks and Shears.
Barnard's Lamp Trimmers...₩ doz $3.75
Tinners'.....20@2%
Seymour's, List, Dec., 1881. 60&10&10@60&10&10&5%
Heinisch's, List, Dec., 1881. 60&10&10@60&10&10&5%
Heinisch's Tailor's Shears.....35%&
First quality C. S. Trimmers..80@80&10%
Second quality C. S. Trimmers. 80@10@80&10&10%
Acme Cast Shears.....10&10%
Diamond Cast Shears.....1%
Clipper.....10&10%
Victor Cast Shears...75&10@75&10&5%
Howe Bros. & Hulbert, Solid Forged Steel.....40%
Chicago Drop Forge & F. Co., Solid Steel Forged.....60%
Clauss Shear Co., Japanned.....70%
Clauss Shear Co., Nickeled, same list.60%

Sheaves—
Sliding Door—
M. W. Co., list July, 1888..50&10@60&5%
R. & E., list Dec. 18, 1885.....55&20%
Corbin's list.....60&10&2%
Patent Roller.....60&10&2%
Patent Roller, Hatfield's.....75%
Russell's Anti-Friction, list Dec. 18, 1885.....60&2%
Moore's Anti-Friction.....50%
Sliding Shutter—
R. & E. list Dec. 18, 1885.....60&10&2%
Sargent's list.....60&10%
Reading list.....60&10&10%

Ship Tools—
L. & I. J. White.....20&5%
Albertson Mfg. Co.....25%

Shoes, Horse, Mule, &c.—
Horse—
Burden's, Perkins', Phœnix, at factory. $4.00
Mule—
Add $1 ₩ keg to above prices.
Ox, Wrought—
Ton lots.....₩ ℔ 9¢
1000 ℔ lots.....₩ ℔ 9½¢
500 ℔ lots.....₩ ℔ 10¢

Shot—
(*Eastern prices 2¢ off, cash, 5 days.*
Drop, ₩ bag, 25 ℔.....$1.21
Drop, ₩ bag, 5 ℔.....30
Buck and Chilled, ₩ 25-℔ bag.....1.46
Buck and Chilled, ₩ 5-℔ bag.....35

Shovels and Spades—
Ames' Shovels, Spades, &c., list Nov. 1, 1885.....20%
NOTE.—Jobbers frequently give 5@7½% extra on above.
Griffith's Black Iron.....50&10%
Griffith's C. S.....60@60&10%
Griffith's Solid C. S. R. R. Goods.....20%
Old Colony (Sanford Fork & Tool Co).35%
St. Louis Shovel Co.....20@20&7½%
Hussey, Binns & Co.....15@25%
Hubbard & Co.....20@20&7½%
Lehigh Mfg. Co.....50&10%
Payne Pettebone & Son, list January, 1886.....30%
Remington's (Lowman's Pat.)30&10@40%
Rowland's, Black Iron.....50&10%
Rowland's Steel.....60&5@60&10%

Shovels and Tongs—
Iron Head.....60&10@60&10&5%
Brass Head.....60&10&10%

Skeins, Thimble—
Western list.....75&5@75&10%
Columbus Wrt. Steel, list Jan. 3, 1889... 45&10%
Coldbrookdale Iron Co.....50&10%
Utica P. S. T. Skeins.....60%
Utica Turned and Fitted.....35%

Sieves—
Buffalo Metallic, S. S. & Co.....50&25%
Shaker (Barler's Pat.) Flour Sifters.... ₩ doz $2.00; ₩ gr $21.60
Electric.....₩ gr $18.00
Hunter's.....₩ doz $2.00
Smith's Adjustable Sifters...₩ doz $2.00
Smith's Adjustable Milk Strainer. ₩ doz $2.00
Smith's Adjustable T. & C. Strainer. ₩ doz. $1.25

Sieves, Wooden Rim—

	Iron.	Plated.
Mesh 18, Nested, ₩ doz..	75¢	95¢
Mesh 20, Nested, ₩ doz..	90¢	$1.05
Mesh 24, Nested, ₩ doz..	$1.10	1.20

Slates—
School, by case.....50@50&10%

Snaps, Garness, &c.—
Anchor (T. & S. Mfg. Co.).....65%
Fitch's (Bristol).....50&10%
Hotchkiss.....10%
Andrews.....50%
Saugen's Patent Guarded.....70&10&10%
German, new list.....40&10%
Covert.....50&2%
Covert, New Patent.....50&5&2%
Covert, New B. E.....60&10&2%
Covered Spring.....60&10&10%

Soldering Irons—
Covert's Adjustable, list Jan. 1, 1886. 35&2%

Spittoons, Cuspidors, &c.
Standard Fiberware—
Cuspidors, 8½-inch, ₩ doz., No. 5, $8; No. X $9.
Spittoons, Daisy, 8-inch, No. 1, $4; 10 and 11 inch, $6.

Spoke Shaves—
Iron.....45%
Wood.....30%
Bailey's (Stanley R. & L. Co.).....40&10%
Stearns'.....20&10@30%
Cincinnati.....25&10%

Spoke Trimmers—
Bonney's.....₩ doz $10.00, 50%
Stearns'.....20&10%
Ives', No. 1, $15.00; No. 2, $12.00 ₩ doz. 55&10%
Douglas'.....₩ doz $9.00, 20%
Cincinnati.....25%

Spoons and Forks—
Tinned Iron—
Basting, Cen. Stamp. Co.'s list...70&10%
Solid Table and Tea, Cen. Stamp. Co.'s list.....70&10%
Buffalo S. S. & Co.....33⅓&2%
Silver-Plated—(4 mos. or 5% cash 30 days).
Meriden Brit. Co., Rogers.....50%
C. Rogers & Bros.....50%
Rogers & Bro.....50%
Reed & Barton.....50%
Wm. Rogers Mfg. Co.....50&10@60%
Simpson, Hall, Miller & Co.....50&10
Holmes & Edwards Silver Co...60@60&5%
L. Boardman & Son.....50&10%
Miscellaneous.
Holmes & Edwards Silver Co.:
No. 07 Mexican Silver.....50&10&5%
No. 30 Silver Metal.....50&10&5%
No. 24 German Silver.....50&10&5%
No. 50 Nickel Silver.....50%
No. 49 Nickel Silver.....50&10
German Silver.....50@50&5
German Silver, Hall & Elton..50&5% cash
Nickel Silver.....50&5@50&10&5% cash
Britannia.....60%
Boardman's Nickel Silver.....50 } 4 mos.
Boardman's Britannia Spoons, case lots.....60 } net

Springs—
Elliptic, Concord, Platform and Half Scroll.....60@60&5%
Cliff's Bolster Springs.....25%

Squares—
Steel and Iron.....} 75&10@80%
Nickel-Plated.....} full cs. ex. 10%
Try Square and T Bevels...60&10@60&10&10%
Disston's Try Square and T Bevels.45&10%
Winterbottom's Try and Miter....30&10%
Starrett's Micrometer Caliper Squares. 25%
Avery's Flush Bevel Squares.....40%
Avery's Bevel Protractor.....50%

Standard Fibre Ware—

	Per Dozen. Plain.	Dec'r'd
Wash-Basins, 10½ in.....	$2.00	$2.25
Wash-Basins, 12 in.....	2.25	2.75
Keelers, 11½ in.....		4.00
Cuspidors.....		8.00
Spittoons, "Daisy," 8 in....	4.00	4.50
Peck Measure.....	4.00	
Half-peck Measure.....	3.50	

See also Pails.

Staples—
Fence Staples, Galvanized.} Same price as B'rb Wire
Fence Staples, Plain.....} See Trd. Rep.

Steelyards.....40&10@50%

Stocks and Dies—
Blacksmith's
Waterford Goods.....30&5@30&10%
Butterfield's Goods.....30&5@30&10%
Lightning Screw Plate.....25@30%
Reece's New Screw Plates...35%&5@40%
Reversible Ratchet.....30%
Gardner.....25%

Stone—
Hindostan No. 1, 3¢; Axe, 3½¢; Slips No. 1, 4½¢
Sand Stone.....₩ ℔ 2½¢
Washita Stone, Extra.....₩ ℔ 19@20¢
Washita Stone, No. 1.....₩ ℔ 14@15¢
Washita Stone, No. 2.....₩ ℔ 10@11¢
Washita Slips, No. 1, Extra..₩ ℔ 36@38¢
Washita Slips, No. 1.....₩ ℔ 24@25¢
Arkansas Stone, No. 1, 4 to 6 in₩ ℔ $1.50
Arkansas Stone, No. 1, 6 to 9 in₩ ℔ $1.85
Turkey Oil Stone, 4 to 8 in.....₩ ℔ 40¢
Turkey Slips.....₩ ℔ $1.00@1.50
Lake Superior, Chase.....₩ ℔ 16¢
Lake Superior Slips, Chase...₩ ℔ 31@32¢
Seneca Stone, Red Paper Brand....₩ ℔ 18@20¢
Seneca Stone, High Rounds..₩ ℔ 20@25¢
Seneca Stone, Small Whets..₩ gro $24.00

Stove Polish—
Joseph Dixon's.....₩ gro $6.00, 10%
Gem.....₩ gro $4.50, 10%
Gold Medal.....₩ gro $6.00, 25%
Mirror.....₩ pro $6.00, —%
Lustro.....₩ gro $4.75
Ruby.....₩ gro $3.75
Rising Sun, 5 gro lots.....₩ gro $5.50
Dixon's Plumbago.....₩ ℔ $5.00
Boynton's Noom Day..₩ gro.....13.00
Parlor Pride Stove Enamel..₩ gro 8 cans
Yates' Liquid, 2 3 5 10 gal....8¢
₩ gal ..$0.90 .80 .70 .60
Yates Standard Paste Polish, 10-℔ cans, ₩ ℔ 15¢
Jet Black.....₩ gro $3.50
Japanese.....₩ gro $3.50
Fireside.....₩ gro $2.50
Diamond O. K. Enamel.....₩ gro $19.00
Bonnell's Liquid Stove Polish..₩ gro $9.00
Bonnell's Paste Stove Polish..₩ gro $6.00
Black Eagle Benzine Paste, 5 and 10 ℔ cans.....12½¢
Black Jack Water Paste, 5 and 10 ℔ cans.....12½¢
Nickel Plate Paste.....₩ gro $6.00

Tacks, Brads, &c.—
List Oct. 19, 1889, extra 10&2 % cash.
Carpet Tacks—
American Iron, Blued.....70%
American Iron, Tinned or Cop'd...70%
Steel, Plain or Bright.....70%
Steel Tinned or Coppered.....70%
Swedes Iron, Blued.....70%
Swedes Iron, Tinned or Cop'd....70%
American Iron Cut Tacks.....67½%
Swedes Iron Upholst'rs' Tacks S.S...70%
Swedes Iron Upholst'rs' Tacks, Tinned, S.S.....70%
Swedes Iron Card and Upholsterers' Tacks, Lanc.....66⅔%
Swedes Iron Card and Upholsterers' Tacks, Tinned, Lanc.....66⅔%
Gimp and Lace Tacks Lanc., Swedes Iron.....66⅔%
Gimp and Lace Tacks, Lanc., Swedes Iron, Tinned.....66⅔%
Gimp and Lace Tacks, S. S.....70%
Gimp and Lace Tacks Tinned, S. S..70%
Swedes Iron Basket or Trimmers' Tacks, Lanc.....66⅔%
Miners' Tacks, S. S.....70%
Bill-Posters' or Railroad Tacks, Lanc., Swedes.....66⅔%
Bill-Poster's' or Railroad Tacks, S.S..70%
Copper Tacks.....50%
Copper Finish, & Trunk Nails.....50%
Cigar Box Nails.....50%
Zinc Glaziers' Points.....50%
Picture-Frame Points.....50%
Looking-Glass Tacks.....50%
Brush Tacks.....50%
Tin-Capped Trunk Nails.....60%
Finishing Nails.....65%
Trunk & Clout Nails, Black & Tin'd.66⅔%
Common and Patent Brads.....60%
Hungarian Nails.....62½%
Basket and Chair Nails.....62½%
Leathered Carpet Tacks.....40%
Miscellaneous—
Double-Pointed.....82½%
Wire Carpet Nails.....50&10%
Wire Brads & Nails, see Nails, Wire.
Steel-Wire Brads, R. & E. Mfg. Co.'s list.....50&10%

Tap Borers—
Common and Rind.....20&10%
Ive's Tap Borers.....33⅓&5%
Enterprise Mfg. Co.....20&10@30%
Clark's.....33⅓@35%

Tapes, Measuring—
American.....33⅓@33⅓&2½%
Spring.....40%
Chesterman's, Regular list.....25@50%

Thermometers—
Tin Case.....80@80&10%

Thimble Skeins—See Skeins.

Ties, Bale- Steel
Standard Wire, list.....50&10&5%

Tinners' Shears, &c.—
Shears and Snips (P. S. & W.).....20@25%
Punches, see Punches.
Snips, J. Mallinson & Co.....33⅓%

Tinware—
Stamped, Japanned and Pierced, list Jan. 20 1887.....70&10@70&10&5%

Tire Benders, Upsetters, &c—
Stoddard's Lightning Tire Upsetters..15%
Detroit Perfected Tire Bender.....15%

Tobacco Cutters—
Champion.....20&10@30%
Wood Bottom.....₩ doz $5.00@$5.25
All Iron.....₩ doz $4.25
Nashua Lock Co.'s ₩ doz, $18.00 50@55%
Wilson's.....55%
Sargent's.....₩ doz, $24, 55&10%
Acme.....₩ doz, $20.00,40%

Transom Lifters—
Wollensak's:
Class 3 and 4, Bronzed Iron.....50%
Class 3 and 4, Bronze Metal.....25%
Class 3 and 4, Brass.....35%
Skylight Lifters.....35%
Crown, Eagle and Shield.....50%
Reiher's, list Jan. 1, 1887-
Bronzed Iron Rods.....50&10&2
Brass, Real Bronze or Nickel Plate..30%
Excelsior.....50&10&2%
Shaw's.....50&10%
Payson's Universal.....40@40&10%

Traps—
Game—
Newhouse.....40@40&5%
Oneida Pattern.....70&70&10%
Game, Blake's Patent.....40&10&5%
Mouse and Rat—
Mouse Wood, Choker, ₩ doz holes, 11@12¢
Mouse, Round Wire.....₩ doz $1.50, 10%
Mouse, Cage, Wire.....₩ doz $2.50, 10%
Mouse, Catch-'em-alive....₩ dz $2.50, 15%
Mouse, Bonanza.....₩ gr $10.00
Mouse Delusion.....₩ gr $15.00
Rat, Decoy.....₩ gr $10.00, 10%
Ideal.....₩ gr $10.00
Cyclone.....₩ gr $5.25
Hotchkiss Metallic Mouse, 5-hole traps, ₩ doz, 90¢; in full cases, ₩ doz.....75¢
Hotchkiss Imp. Rat Killer..₩ gro $18.50
Hotchkiss New Rat Killer...₩ gro $16.50

Trowels—
Lothrop's Brick and Plastering.25@25&5%
Reed's Brick and Plastering.....15%
Disston's Br'k and Plastering, 25@25&10%
Peace's Plastering.....25%
Clement & Maynard's.....20%
Rose's Brick.....15@20%
Brade's Brick.....25%
Worrall's Brick and Plastering.....20%
Garden.....70%

Triers—
Butter and cheese.....25%

Trucks, Warehouse, &c.—
B. & L. Block Co.'s list, '82.....40%

Tubes, Boiler—
See Pipe.

Twine—

Flax Twine—	BC.	B.
No. 9, ¼ and ⅛ ℔ Balls	22¢	30¢
No. 12, ¼ and ⅛ ℔ Balls	21¢	29¢
No. 18, ¼ and ⅛ ℔ Balls	18¢	28¢
No. 24, ¼ and ⅛ ℔ Balls	18¢	28¢
No. 36, ¼ and ⅛ ℔ Balls	16¢	27¢

No. 264, Mattrass, ¼ and ⅛ ℔ Balls.48@50¢
Chalk Line, Cotton, ⅛ ℔ Balls.....25¢
Mason Line, Linen, ⅛ ℔ Balls.....55¢
2-Ply Hemp, ¼ and ⅛ ℔ Balls (Spring Twine).....11¼¢
3-Ply Hemp, 1 ℔ Balls.....12¢@12¼¢
3-Ply Hemp, 1½ ℔ Balls.....11¢@11¼¢
Cotton Wrapping, 5 Balls to ℔...15¢@16¢
2, 3, 4 and 5-Ply Jute, ⅛ ℔ Balls.....10¢
Wool.....6¼¢@6¾¢
Paper.....13¢@14¢
Cotton Mops, 6, 9, 12 and 15 ℔ to doz..18¢

Vises—
Solid Box.....50&10@60%
Parallel—
Fisher & Norris Double Screw.....15&10%
Stephens'.....25@30%
Parker's.....20@25%
Wilson's.....55%
Howard's.....40%
Bonney's.....40&10%
Millers Falls.....40@40&10%
Trenton.....40@5@44&10%
Merrill's.....15@20%
Sargent's.....60&10&10%
Backus and Union.....40%
Double Screw Leg.....15&10%
Prentiss.....30@25%
Simpson's Adjustable.....40%
Moore's.....30%
Saw Filers—
Bonney's, Nos. 2 & 3, $15.00.....40&10%
Stearn's.....33⅓&10@33⅓&10&10%
Stearn's Silent Saw Vises.....33⅓@35%
Sargent's.....66⅔&10%
Hopkins'.....₩ doz $17.50, 10%
Reading.....40&10%
Wentworth.....20&10%
Combination Hand Vises.....₩ gr $42.00
Cowell Hand Vises.....30%
Bauer's Pipe Vises.....10%
Cincinnati.....20&10%

Wagon Boxes—
Per ℔.....2¾¢

Wagon Jacks—
Daisy.....25%

Washer Cutters—
Smith's Pat.....₩ doz $12.00, 20&10&10%
Johnson's.....₩ doz $11.00, 33⅓%
Penny's, ₩ doz Pol. $14; Jap'd, $16.00, 55%
Appleton's.....₩ doz $16.00, 60&10%
Bonney's.....30&10%
Cincinnati.....25&10%

Washers—

Size.....	⅛	5-16	⅜	½	⅝	¾	1
Washers....	6¼	5½	4½	3½	3	3	3

In lots less than 200 ℔, ₩ ℔, add ¼¢, 5-℔ boxes 1¢ to list.

Wedges—
Iron.....₩ ℔ 3½¢
Steel.....₩ ℔ 4 ¢

Well Buckets, Galvanized—
See Trade Report.
Hill's.....₩ doz, 12 qt, $4.25; 14 qt, $5.25
Iron Clad.....₩ doz, 14 qt, $4.25@$4.50
Whiting's Flat Iron Band.....$4.25@4.50
Whiting's Wired Top..₩ doz $4.00@.4.25

Well Wheels—
8 in., $2.25; 10 in., $2.70; 12 in., $3.25

Wire—
Iron—See Trade Report.
Market,
Br. & Ann., Nos. 0 to 18.....67½%
Cop'd, Nos. 0 to 18.....62½%
Galv., Nos. 0 to 18.....57½%
Tin'd, Tinned list Nos. 0 to 18.....57½%
Stone,
Br. and Ann'd, Nos. 16 to 18.....70%
Bright and Ann'd, Nos. 19 to 26..70&5%
Br. and Ann'd, Nos. 27 to 36.....75%
Tinned.....70%
Tinned Broom Wire.....70@70&5%
Galvanized Fence.....60%
Annealed Fence, Nos. 8 and 9.....67½%
Annealed Grape, Nos. 10 to 14.....67½%
Brass, list Jan. 18, 1884.....25%
Copper, list Jan. 18, 1884.....25%
Barb Fence.....See Trade Report
Wire on Spools.....65%
Malin's Steel and Tin'd Wire on Spools. 50%
Malin's Brass and Cop. Wire on Spools 40%
Cast Steel Wire.....50%
Stubs' Steel Wire.....$6.00 to 2, 30%
Steel Music Wire, Nos. 12 to 30..55¢ ₩ Picture Wire.....New list 50%
Barb Wire Safety Guards, ₩ 1000, $9.00, 25%
Wire Clothes Lines, see Lines.

Wire Cloth, Netting, &c.
Painted Screen Cloth, good quality, ₩ 100 sq. ft., $1.80 @ $1.90
Galvanized Wire Netting.....70@70&10%

Wire Goods—
See Bright Wire Goods.

Wire Rope—
List May 1, 1886.
Iron.....25@30%
Iron, Galvanized.....30%
Cast Steel.....35%

Wrenches—
American Adjustable.....40%
Baxter's Adjustable "S".....40&10@50%
Baxter's Diagonal.....40&10@50%
Coes' Genuine.....55&3%
Coes' "Mechanics".....55&10&3%
Girard Standard.....70&10%
Machinists', Sterling Wrench Co. 70&10%
Lamson & Sessions' Engineers'.. 60&10%
Lamson & Sessions' Standard... 70&10%
Goes' Pattern, Wrought.....} 75&10@75
Girard Agricultural.....} &10&5%
Lamson & Sessions' Agric'l..} 75&10@75
Sterling Wrought.....} &10&5%
Bemis & Call's
Pat. Combination.....35%
Merrick's Pattern.....35%
Brigg's Pattern.....25%
Cylinder or Gas Pipe.....40&5%
No. 3 Pipe.....40&10%
Aiken's Pocket (Bright).....36.00, 50&10%
The Favorite Pocket.....₩ doz $4.00, 40%
Webster's Pat. Combination.....25%
Boardman's.....20&10%
Always Ready.....25&5%
Alligator.....50%
Donohue's Engineer.....20&10%
Acme, Bright.....60&3%
Acme, Nickeled.....50&3%
Walker's.....55&3%
Diamond Steel.....55&3%
Cincinnati Brace Wrenches.....15&10%
Cincinnati Monkey Wrenches....15&10%

Wringers, Clothes—
List March 11, 1889, 2% cash.

Wrought Goods—
Staples, Hooks, &c, list Jan. 12, 1886, 80&2@80&25%

CURRENT METAL PRICES.

DECEMBER 31, 1889.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market reports.

IRON AND STEEL.

Bar Iron from Store.

Common Iron:	
¾ to 2 in. round and square.. 1 to 6 in. x ⅝ to 1 in.	₩ lb 2.00 @ ....¢
Refined Iron:	
¾ to 2 in. round and square.. 1 to 4 in. x ⅝ to 1½ in. 4½ to 6 in. x ⅝ to 1 in	₩ lb 2.20 @ ....¢
1 to 6 in. x ¼ and 5-16	₩ lb 2.40 @ ....¢
Rods—⅝ and 11-16 round and sq.	₩ lb 2.30 @ ....¢
Bands—1 to 6 x 3-16 to No. 12	₩ lb 2.50 @ ....¢
"Burden Best" Iron, base price	₩ lb 3.00 @ ....¢
Burden's "H. B. & S." Iron, base price	₩ lb 2.50 @ ....¢
"Ulster"	₩ lb 3.00 @ ....¢
Norway Rods	4.00 @ 5.00¢

Merchant Steel from Store.

	Per pound.
Open-Hearth and Bessemer Machinery, Toe Calk, Tire and Sleigh Shoe, base price in small lots	2¾¢
Best Cast Steel, base price in small lots	8 ¢
Best Cast Steel Machinery, base price in small lots	5¢

Sheet Iron from Store.

	Common American.		R. G.		Cleaned.
10 to 16	₩ lb 3.00	@ 3.00¢	3.50	@ ....¢	
17 to 20	₩ lb 3.25	@ 3.25¢	3.50	@ 3.75 ¢	
21 to 24	₩ lb 3.35	@ 3.35¢	3.75	@ ....¢	
25 and 26	₩ lb 3.45	@	3.75	@ ....¢	
27	₩ lb 3.55	@ 3.63¾¢	4.00	@ ....¢	
28	₩ lb 3.75	@ ....¢	4.25	@ ....¢	
	B. B.		2d qual.		
Galv'd, 14 to 20,	₩ lb, 5.00	@ ...	4.75½	@ ....¢	
Galv'd, 21 to 24,	₩ lb, 5.37½	@ ...	5.12½	@ ....¢	
Galv'd, 25 to 26,	₩ lb, 5.75	@ ...	5.50	@ ....¢	
Galv'd, 27	₩ lb, 6.12½	@ ...	5.85½	@ ....¢	
Galv'd, 28	₩ lb, 6.50	@ ...	6.23	@ ....¢	
Patent Planished	₩ lb A 10¢		B, 9¢		
Russia	₩ lb 9½¢ @ 10¢				
American Cold Rolled B. B.	₩ lb 5¢ @ 7¢				
Craig Polished Sheet Steel	₩ lb, 8¼¢				

English Steel from Store.

Best Cast	₩ lb 15 ¢
Extra Cast	₩ lb 16½ @ 17 ¢
Swaged, Cast	₩ lb 16 ¢
Best Double Shear	₩ lb 15 ¢
Blister, 1st quality	₩ lb 12 ¢
German Steel, Best	₩ lb 10 ¢
2d quality	₩ lb 9 ¢
3d quality	₩ lb 8 ¢
Sheet Cast Steel, 1st quality	₩ lb 15 ¢
2d quality	₩ lb 14 ¢
3d quality	₩ lb 12¾¢

METALS.

Tin.

	Per lb
Banca, Pigs	23 ¢
Straits, Pigs	23¾¢
English, Pigs	23¾¢
Straits in Bars	23¾¢

Tin Plates.

	Charcoal Plates.—Bright.		Per box.
Melyn Grade	IC, 10 x 14	@	$6.50
" "	IC, 12 x 12	@	6.75
" "	IC, 14 x 20	@	6.50
" "	IC, 20 x 28	@	13.00
" "	IX, 10 x 14	@	8.00
" "	IX, 12 x 12	@	8.25
" "	IX, 14 x 20	@	8.00
" "	IX, 20 x 28	@	15.75
" "	DC, 12½ x 17	@	6.00
" "	DX, 12½ x 17	@	7.50
Galland Grade	IC, 10 x 14	@	6.50
" "	IC, 12 x 12	@	6.75
" "	IC, 14 x 20	@	6.40
" "	IX, 10 x 14	@	7.65
" "	IX, 12 x 12	@	7.90
" "	IX 14 x 20	@	7.65
Allaway Grade	IC, 10 x 14	@	5.60
" "	IC, 12 x 12	@	5.75
" "	IC, 14 x 20	@	5.60
" "	IC, 20 x 28	@	11.00
" "	IX, 10 x 14	@	6.75
" "	IX, 12 x 12	@	6.90
" "	IX, 14 x 20	@	6.75
" "	IX, 20 x 28	@	13.50
" "	DC, 12½ x 17	@	5.30
" "	DX, 12½ x 17	@	6.30
	Coke Plates.—Bright.		
Steel Coke.—IC, 10 x 14, 14 x 20		@	$5.12½
10 x 20		@	7.25
20 x 28		@	10.25
IX, 10 x 14, 14 x 20		@	6.00
BV Grade.—IC, 10 x 14, 14 x 20		@	4.87½
	Charcoal Plates.—Terne.		
Dean Grade.—IC, 14 x 20		@	$5.10
20 x 28		@	10.25
IX, 14 x 20		@	5.90
20 x 28		@	11.80
Abecarne Grade.—IC, 14 x 20		@	4.87½
20 x 28		@	9.87½
IX, 14 x 20		@	5.80
20 x 28		@	11.60
	Tin Boiler Plates.		
IXX, 14 x 26	112 sheets	@	$13.00 @ $13.00
IXX, 14 x 28	112 sheets	@	13.25
IXX, 14 x 31	112 sheets	@	14.75

Copper.

DUTY: Pig, Bar and Ingot, 4¢; Old Copper, 3¢ ₩ lb. Manufactured (including all articles of which Copper is a component of chief value), 45 % ad valorem.

Ingot.

Lake	@ 16¢
Baltimore Grade	@ 14½¢

Sheet and Bolt.

Prices adopted by the Association of Copper Manufacturers of the United States, December 5, 1889, being quotations for all sized lots.

Not wider than	Not longer than	And longer than	Weights per square foot and prices per pound. Over 64 oz.	32 to 64 oz.	16 to 32 oz.	14 to 16 oz.	12 to 14 oz.	10 to 12 oz.	8 to 10 oz.	Less than 8 oz.
30	72	—	22	22	22	23	24	25	28	30
30	—	72	22	22	22	23	25	27	31	...
36	96	—	22	22	22	24	26	30	33	...
36	—	96	22	22	23	25	27	31	35	....
48	96	—	22	22	24	26	28	32	....	....
48	—	96	22	22	25	27	29	33	....	....
60	96	—	22	22	27	29	34	....	....	....
60	—	96	22	23	28	31	....	....	....	....
84	96	—	23	24	29	34	....	....	....	....
84	—	96	24	25	30	35	....	....	....	....
Over 84 in. wide			25	27	....	....	....	....	....	....

All Bath Tub Sheets	16 oz.	14 oz.	12 oz.	10 oz.
Per pound	$0.25	0.27	0 29	0.32

Bolt Copper, ⅝ inch diameter and over, per pound ....29¢

Circles, 60 inches in diameter and less, 3 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Circles, over 60 inches diameter, up to 96 inches diameter, inclusive, 5 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Circles, over 96 inches diameter, 6 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Segment and Pattern Sheets, 3 cents per pound advance over price of sheets required to cut them from.

Cold or Hard Rolled Copper, 14 ounces per square foot and heavier, 1 cent per pound over the foregoing prices.

Cold or Hard Rolled Copper, lighter than 14 ounces per square foot, 2 cents per pound over the foregoing prices.

Copper Bottoms, Pits and Flats.

	Per pound.
14 ounce to square foot and heavier	26¢
12 ounce and up to 14 ounce to square foot	27¢
10 ounce and up to 12 ounce	28¢

Circles less than 8 inches diameter 2 cents per pound additional.

Circles over 13 inches diameter are not classed as Copper Bottoms.

Tinning.

Tinning sheets on one side, 10, 12 and 14 x 48 each	8¢
Tinning sheets on one side, 30 x 60 each	30¢
For tinning boiler sizes, 9 in. (sheets 14 in. x 60 in.), each	15¢
For tinning boiler sizes, 8 in. (sheets 14 in. x 56 in.), each	12¢
For tinning boiler sizes, 7 in. (sheets 14 in. x 52 in.) each	12¢
Tinning sheets on one side, other sizes, per square foot	2½¢

For tinning both sides double the above prices.

Planished Brass and Copper.

14 x 48.

14 and 16 oz. and heavier..31¢. By the case..30¢ ₩ lb
12 oz. and lighter.....33¢. By the case..32¢ ₩ lb

24 x 48 and 30 x 60.

14 and 16 oz. and heavier..44¢. 12 oz.....37¢ ₩ lb

Seamless Brass and Copper Tubes.

O. G.	N. G.	⅜	¼	⅝	½	⅞	1	1¼
8-14	6-12	37	33	30	29	28	27	24
15	13	38	33	31	30	29	28	25
16	14	39	34	32	31	30	29	25
17	15	40	35	33	30	31	30	26
18	16	42	36	34	32	31	30	27
19	17	43	37	35	34	33	32	29
20	18-19	44	39	37	36	35	34	31
21	20	46	41	39	38	37	36	34
22	21	48	42	40	39	38	37	36
23	22	50	44	42	41	40	39	39
24	23	53	46	44	43	41	40	41
25	24	56	49	46	45	44	43	45

Copper, Bronze and Gilding Tube, 3¢ ₩ lb additional.

Brazed Brass Tubing. (To No. 20, inclusive.)

Above 5-16 inch to 3 inch, inclusive	35¢
Plain, above 3 inch	45¢
Plain, 5-16 inch	45¢
Plain, ¼ inch	60¢
Plain, 3-16 inch	$1.00
Plain, ⅛ inch	1.50
Fancy Tubing, Brass, to No. 20, inclusive	43¢ ₩ lb
Bronze Tubing, 3¢ ₩ lb more than Brass.	
Discount from list	25 @ ... %

Roll and Sheet Brass.

Discount from list ....35 %

High Brass Rods.

Over 1 inch diameter	27¢
¼ inch to 1 inch diameter, both inclusive	24¢
No. 8 and less than ¼ inch diameter	26¢
Smaller than No. 8	30¢
Hexagon, Octagon and Square, 2¢ ₩ lb advance over Round Rods.	

Spelter.

Duty: Pig, Bars and Plates, $1.50 ₩ 100 lb.	
Western Spelter	6¼¢
"Bergenport"	9¢
"Bertha"	9¢

Zinc.

Duty; Sheet, 2½¢ ₩ lb.	
600 lb casks	6½¢
Per lb	7¼¢

Lead.

Duty: Pig, $2 ₩ 100 lb. Old Lead, 2¢ ₩ lb. Pipe and Sheets, 3¢ ₩ lb.	
American	4½¢
Newark	4¾¢
Bar	4¾¢
Pipe, subject to trade discount	6 ¢
Tin-Lined Pipe, subject to trade discount	15¢
Block Tin Pipes, subject to trade discount	45¢
Sheet, subject to trade discount	6¾¢

Solder.

½ @ ½ (Guaranteed)	14¾¢
Extra Wiping	12½¢

The prices of the many other qualities of Solder in the market indicated by private brands vary according to composition.

Antimony.

Cookson	₩ lb 32½¢
Hallett's	" 25 ¢

Fittings.

Cast Iron Fittings, Black and Galvanized	75 %
Cast Iron Fittings, Bushings & Plugs	75&10@75&10&5 %
Cast Iron Fittings, Flanges	75 %
Malleable Iron Bushings	75&10@75&10&5 %
Malleable Iron Unions	70 %
Malleable Iron American Unions	55 %
Malleable Iron Unions, Keystone	55 %
Wrought-Iron Nipples	75&5@75&10 %
Wrought-Iron Couplings	70 %
Wrought-Iron Long Screws	70@70&5 %
Casing Fittings	60 %
Malleable Iron Fittings	40 %

Valves, Cocks, &c.

Iron Body Valves	70 %
Throttle Valves, Iron Body	70 %
All-Iron Valves	65 %
Compression Gauge Cocks	60 %
Mississippi Gauge Cocks	60 %
Register Gauge Cocks	65@65&10 %
Air Cocks and Radiator Air Cocks	65@65&10 %
Steam Gauge Cocks	60 %
Oil Cups, Plain, Elbow, new pattern, T and Lever Handle	65@65&10 %
Globe Oil Cups	55 %
Common Lubricators	65@65&10 %
Lubricators with Air Cocks	65@65&10 %
Iron Body Lubricators	60 %
Steam Whistles	65 %
Whistle Valves	65 %
Water Gauges	65 %
Brass Expansion Joints	55 %
Pump Valves	55 %
Soldering Unions	65 %
Soldering Nipples	70 %
Brass Unions (Union Joints)	65 %
Radiator Nipples	60 %
Fusible Plugs	60 %
Oil Pumps	55 %
Self-Acting Air Valves	65 %
Vacuum Valves	55 %
Steam Swing Joints	55 %
Iron Strainers	55&10 %
Jenkins' Iron Body Valves, except Gate Valves	60&10 %
Jenkins' All-Iron Valves, except Gate Valves	60 %
Jenkins' Iron Body Gate Valves	55 %
Jenkins' All-Iron Gate Valves	55 %
Iron Cocks, all Iron	65 %
Iron Cocks, with Brass Plugs	65 %
Brass Globe, Angle and Cross Valves	65 %
Brass Globe Valves, Finished	45 %
Brass Globe and Angle Valves, hose outlet	65 %
Brass Garden Hose Valves	65 %
Brass Caps for Hose Valves	60 %
Brass Horizontal, Vertical and Angle Check Valves	65 %
Brass Safety Valves	65 %
Brass Safety Valves, low pressure	65 %
Brass Safety Valves, low pressure, with balance weight	65 %
Brass Butterfly Valves	55 %
Brass Throttle Valves	55 %
Brass Radiator Valves	65 %
Brass Radiator Valves, Jenkins'	65 %
Brass Jenkins' Globe, Angle, Cross, Corner, Safety and Check Valves	65 %
Brass Jenkins' Gate Valves	50 %
Brass Steam Cocks	60 %
Brass Gas, Meter and Union Meter Cocks	60 %
Brass Fittings, Rough	60 %
Brass Fittings, Finished	25 %
Brass Bushings	60

Plumbers' Brass Work.

Ground Key Work, Rough	60 %
Ground Key Work, Finished	55 %
Compression Work	60@60&5 %
Compression Work, Grundy, Heavy Pattern	55 %
Chain Stays	60 %
Basin Plugs	60 %
Sink or Bath and Wash Tray Plugs	60 %
Basin Clamps	55 %

PAINTS, OILS AND COLORS.

Animal and Vegetable Oils.

Linseed, City, raw	per gal	60 @	62
" " boiled		62 @	65
" Western, raw		57 @	58
Lard, City, Extra Winter		55 @	56
" " Prime, present make		.. @	54
" " Extra No. 1		45 @	48
" " No. 1		38 @	42
" Western, prime		53 @	54
Cotton-seed, Crude, prime		.. @	28
" " off grades		26 @	27
" Summer Yellow, prime		35 @	36
" " off grades		.. @	34
Sperm, Crude		.. @	65
" Natural Spring		.. @	..
" bleached Spring		.. @	..
" Natural Winter		76 @	78
" Bleached Winter		81 @	83
Whale, Crude		.. @	40
" Natural Winter		40 @	..
" Bleached Winter		48 @	..
" Extra Bleached		51 @	..
Sea Elephant, Bleached Winter		58 @	60
Menhaden, Crude, Sound		22 @	24
" Crude, Southern		.. @	..
" Light Pressed		27 @	29
" Bleached Winter		32 @	33
" Extra Bleached		36 @	..